STATE OF CALIFORNIA

The Resources Agency

Department of Water Resources

BULLETIN No. 177-69

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1969 SEASON

OCTOBER 1970

NORMAN B. LIVERMORE, JR.
Secretary for Resources
The Resources Agency

RONALD REAGAN
Governor
State of California

WILLIAM R. GIANELLI
Director
Department of Water Resources

FOREWORD

Bulletin No. 177-69 discusses the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1969 watermaster season. Authority to prepare this report is described in the California Water Code, Division 2, Part 4, Chapter 7.

The bulletin is presented in two parts. Part I contains general information about water rights, water supply, service areas, and watermaster duties. Part II contains the specifics of the 1969 watermaster season, including the streamflow in the various service areas, the methods of distribution, and all other information pertinent to 1969 watermaster activities.

William R. Gianelli, Director
Department of Water Resources
The Resources Agency
State of California

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DEPARTMENT OF WATER RESOURCES

RONALD REAGAN, Governor
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WILLIAM R. GIANELLI, Director, Department of Water Resources
JOHN R. TEERINK, Deputy Director

This report was prepared by the
Northern District
under the direction of

Gordon W. Dukleth . . . . . District Engineer
Wayne S. Gentry . . . . . Chief, Operations Section

by

Edwin J. Barnes . . . . . Chief, Watermaster Unit and Supervising Watermaster
Ross P. Rogers . . . . . Watermaster

assisted by

Virgil D. Buechler . . . . . Deputy Watermaster
Jerry T. Erb . . . . . Deputy Watermaster
Charles H. Holmes . . . . . Deputy Watermaster
Lester L. Lighthall . . . . . Deputy Watermaster
John A. Nolan . . . . . Deputy Watermaster
Lynn W. Peterson . . . . . Deputy Watermaster

Report data and text on the Indian Creek and Middle Fork Feather River Watermaster Service Areas were furnished by the Central District

by

H. J. Nessler . . . . . Supervising Watermaster
Harvey A. Jorgenson . . . . . Watermaster
Conrad Lahr . . . . . Deputy Watermaster

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ABSTRACT

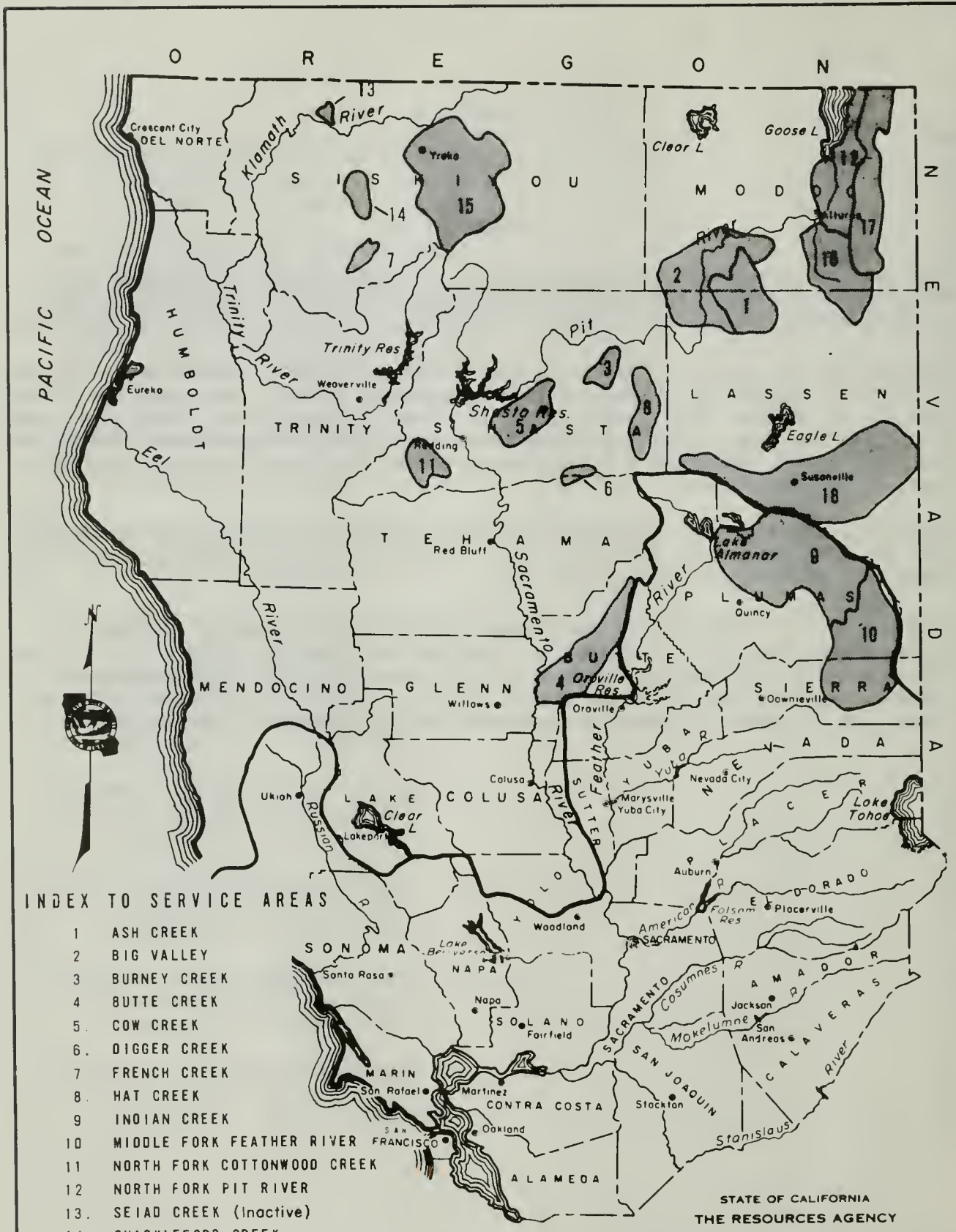
The primary purpose of watermaster service is to distribute water among users in accordance with their established water rights. This is accomplished by apportioning available supplies in streams which have had water rights determinations.

Watermaster service was provided by the Department of Water Resources to 17 areas in Northern California during the 1969 watermaster season. They are: Ash Creek, Big Valley, Burney Creek, Butte Creek, Cow Creek, Digger Creek, French Creek, Hat Creek, Indian Creek, Middle Fork Feather River, North Fork Cottonwood Creek, North Fork Pit River, Shackleford Creek, Shasta River, South Fork Pit River, Surprise Valley, and Susan River.

Excellent water supply conditions existed in essentially all of these areas during the 1969 irrigation season, as the streamflows throughout Northern California were well above the long-term average.

The bulletin is presented in two parts. Part I contains general information about water rights, water supply, and watermaster areas and duties. Part II contains specific information for each service area during the 1969 watermaster season, including available streamflow, methods, and amounts of water distribution, and all other information pertinent to 1969 watermaster activities.

FIGURE 1



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STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATERMASTER SERVICE AREAS IN NORTHERN CALIFORNIA

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PART I - GENERAL INFORMATION

Distribution of water in watermaster service areas is a continuing statutory function of the Department of Water Resources as provided in Part 4 of Division 2 of the California Water Code.

The primary purpose of watermaster service is to distribute water in accordance with established water rights. This is accomplished by apportioning available supplies in streams which have had water right determinations.

A major benefit of watermaster service to water users and the State is that court litigation and physical violence, which in past years occurred quite frequently, are essentially eliminated. Under watermaster service each water right owner is assured that his rights are being protected without his having to take legal action against other users. Another important benefit results from increased use of available supplies through reduction of wasted water.

Because both the water right owners and the State receive benefits from watermaster service, the costs of performing the service are shared. The State general tax fund pays for one-half the cost of operating each service area. The water right owners in the service area pay the other one-half.

Determination of Water Rights

Water rights determinations for purposes of establishing a watermaster service area may be accomplished by "statutory" adjudication, "court" adjudication, permit or license to appropriate, or by agreement.

The California Water Code (Sections 2500-2900) contains procedures whereby water users on any stream may petition to have the State Water Resources Control Board, Division of Water Rights, make a legal determination of water rights on that stream. If the Board finds that such a determination is in the public interest, it proceeds with a Statutory Adjudication. This adjudication ultimately results in a court decree which defines all water rights on the stream.

A similar but less extensive method of defining water rights involves a "court" adjudication procedure. When an action is brought before the Superior Court in the county in which there is a water rights dispute, the court has two methods available for its settlement. It may refer the action to the State Water Resources Control Board for a determination under authority contained in Sections 2000-2076 of the Water Code. Or, it may make an investigation of the facts and render a decision without referral to the Board.

These court adjudications determine only the water rights of parties named in the action and therefore do not necessarily define all water rights on the stream. Consequently, they sometimes precipitate serious conflicts between decreed water right owners and persons claiming rights for riparian lands which were not considered in the decree.

Almost all of the streams under state watermaster service have had their water rights defined by the courts under one of the above adjudication procedures. These adjudications (decrees) establish each owner's rights as to allowable rate of diversion, season of use, point of diversion, and place of use. They also establish priorities whereby each owner's rights are shown in relation to the rights of all other decreed owners.

Under the priority system all first priority rights must be fully satisfied

before water can be diverted to any lower priority rights (second, third, etc.). When a shortage occurs within any priority, the available water is proportioned among all owners of that priority.

Description of Watermaster Service Areas

A watermaster service area may be created either by petition from water users (Section 4050 of the Water Code) or by order of a Superior Court.

The first watermaster service areas were created in September 1929, while the most recent addition was made in November 1968. Prior to 1929, some watermaster service was provided in accordance with the Water Commission Act of 1913. There are now about 50 streams in Northern California which are under state watermaster service. These are combined into the 18 service areas shown on Figure 1. Sixteen are in the Northern District and two are in the Central District. The Seiad Creek service area is presently inactive.

The service areas are located primarily in the mountainous northeastern part of the State where the growing season varies between about 100 and 140 days. Meadow hay and alfalfa are the principal crops under irrigation, although a considerable amount of land is used exclusively for pasturing livestock. Most irrigation is accomplished by gravity systems, with water users diverting directly from the streams at one or more diversion points. However, pumped diversions and sprinkler irrigation systems are becoming popular in some areas.

Table 1 lists all watermaster service areas in Northern California, the date each was created, and the corresponding decrees and agreement under which each is operated.

Schematic drawings of the major stream systems within each service area are presented in Figures 2 through 18. These drawings show the relative location of major roads, stream gaging stations, diversion points, and water right allotments for each diversion. The diversion points shown in these figures correspond to those listed in the respective decrees which define the water rights.

Watermaster Responsibilities

To assure the proper distribution of water within his service area, each watermaster must ascertain the amount of water available and distribute it both by amount and priority in accordance with established water rights. To accomplish his purposes, the watermaster is provided authority both by the Water Code and by provisions of pertinent court decrees or voluntary agreements to physically regulate the various streams in the service area. He is further authorized to supervise the design, construction, operation and maintenance of diversion dams, headgates, and measuring devices.

Each watermaster supervises water distribution at approximately 100 to 200 diversions in one or more service areas. The frequency of visiting these diversion points substantially increases in years of short water supply.

Permanent measurement and control devices, which the State requires at each owner's main point of diversion, are constructed by the water users under supervision of the watermaster. Installation of accurate, easily set, and lockable structures is a continuing objective of watermaster service, since once they are built, conflicts among water users almost always stop. Also, the watermaster's ability to visit and set each diversion on a

TABLE 1

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION

Watermaster Service Area	Name of Stream System	County	Decree Number	Decree Date	Type*	Date Watermaster Service Area Created	Remarks
Ash Creek	Ash Creek	Modoc ** and Lassen	3670	10-27-47	CR	4-03-59	Included as part of Big Valley service area 1949 through 1958.
Big Valley	Pit River	Modoc ** and Lassen	6395	2-17-59	S	11-13-34	Service provided in accordance with recorded agreement in 1934. Service area operated under recorded agreement 1935 through 1958, and under decree since 1959.
Burney Creek	Burney Creek	Shasta	5111	1-30-26	CR	9-11-29	Service provided in accordance with decree since 1926.
Butte Creek	Butte Creek	Butte	18917	11-06-42	S	1-07-43	
Cow Creek	North Cow Creek	Shasta	5804	4-29-32	CR	10-17-32	
	Oak Run Creek	Shasta	5701	7-22-32	CR	10-17-32	
	Clover Creek	Shasta	6904	10-04-37	CR	1-21-38	Included in Cow Creek service area.
Digger Creek	Digger Creek	Shasta and Tehama **	2213	8-12-99	C	6-11-64	
			3214	5-27-13	C		
			3327	10-16-17	C		
			4570	2-24-27	C		
French Creek	French Creek	Siskiyou	14478	7-1-58	CR	11-19-68	
Hat Creek	Hat Creek	Shasta	5724	5-14-24	CR	9-11-29	Service provided in accordance with decree since 1924.
			7858	10-07-35	CR		
Indian Creek	Indian Creek	Plumas	4185	5-19-50	S	2-19-51	
Middle Fork Feather River	Middle Fork Feather River	Plumas ** and Sierra	3095	1-22-40	S	3-29-40	
North Fork Cottonwood Creek	North Fork Cottonwood Creek	Shasta	5479	6-09-20	CR	9-11-29	Service provided intermittently in accordance with the decree since 1924.
North Fork Pit River	North Fork Pit River and all tributaries except Franklin Creek	Modoc	4074	12-14-39	S	12-18-39	All stream systems consolidated into North Fork Pit River service area 12-13-40.
	New Pine Creek	Modoc	2821	6-14-32	CR	6-22-32	
	Davis Creek	Modoc	2782	6-30-32	CR	7-13-32	
	Franklin Creek	Modoc	3118	9-08-33	CR	9-14-33	
	Cottonwood Creek	Modoc	2344	5-03-40	CR	12-13-40	
Seiad Creek	Seiad Creek	Siskiyou	13774	4-10-50	S	11-06-50	Service provided in accordance with decree by order of the court in 1950. Service suspended since September 1964.
Shackleford Creek	Shackleford Creek	Siskiyou	13775	4-10-50	S	11-06-50	Service provided in accordance with decree by order of the court in 1950.
Shasta River	Shasta River	Siskiyou	7035	12-29-32	S	3-01-33	
South Fork Pit River	South Fork Pit River	Modoc ** and Lassen	3273	10-30-34	CR	12-31-34	Service includes operation of West Valley Reservoir (built subsequent to issuance of decree) in accordance with the demands of South Fork Irrigation District.
	Pine Creek	Modoc	Agreement	11-22-33		1-12-35	
Surprise Valley	Cedar Creek	Modoc	1206	5-22-01	C	9-11-29	All adjudicated stream systems in Surprise Valley were consolidated into the Surprise Valley service area on 1-10-39. Bidwell Creek was added on March 16, 1960. Service started on Cedar Creek in 1926 in accordance with the decree. Service was provided on Soldier and Owl Creeks in 1929 in accordance with the decrees by order of the court.
			2343	2-15-23	C		
	Soldier Creek	Modoc	2405	11-28-28	CR	9-11-29	
	Owl Creek	Modoc	2410	4-29-29	CR	9-11-29	
	Emerson Creek	Modoc	2840	3-25-30	CR	4-02-03	
	Mill Creek	Modoc	3024	12-19-31	CR	12-30-31	
	Deep Creek	Modoc	3101	1-25-34	CR	12-29-34	
	Pine Creek	Modoc	3391	12-07-36	CR	1-13-37	
	Rader Creek	Modoc	3626	6-04-37	CR	6-12-37	
	Eagle Creek	Modoc	2304	4-05-26	C	1-10-39	
			3284	11-05-37	CR		
	Bidwell Creek	Modoc	6420	1-13-60	S	3-16-60	
Susan River	Susan River	Lassen	4573	4-18-40	CR	11-10-41	
	Baxter Creek	Lassen	8174	12-15-55	S	2-16-56	
	Parker Creek	Lassen	8175	12-15-55	S	2-16-56	

* Explanation of type of Decree:
C Court adjudication (court makes determination from evidence submitted - no report of referee)
CR Court adjudication (referred to State Water Resources Control Board for investigation and report)
S Statutory adjudication (State Water Resources Control Board is petitioned by water users to make a determination of all water rights on a stream system)

** Decree entered by the Superior Court of this county

regular basis is greatly facilitated by good structures.

The watermaster is often called upon to make immediate field or on-the-spot interpretations of various court decrees, agreements, etc. Since most of these documents were written more than 30 years ago, many situations have developed that were not initially considered. Therefore, the watermaster must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. To accomplish this he must possess a good understanding of California Water Law.

Water Supply

Water supply in the watermaster service areas is derived principally from unregulated runoff of small streams. Peak runoff, mostly snowmelt, occurs in the spring, with relatively small streamflow occurring in the summer and early fall. Additional supplies from storage reservoirs and ground water pumping are used in some areas to supplement natural streamflow.

In some service areas the water supply must be predicted in advance to determine the date watermastering will begin and, to some extent, the manpower needed. The Department's Bulletin No. 120 series, "Water Conditions in California", is used to assist in these predictions.

Precipitation

The streamflow available for distribution is affected by total precipitation, amount of snowpack, air temperature, and the amount of rainfall received during the irrigation season. The latter is particularly important in the Upper Pit River-Surprise Valley areas, where about 25 to 30 percent of the annual precipitation occurs in April, May and June. Spring storms, which are normally accompanied by cooler temperatures, materially affect both the supply and the demand for water. Temperatures in the spring affect the demand for water and the manner in which snowmelt runoff occurs. A hot, dry spring depletes the water supply very early, even in years of normal snowpack. A cold, wet spring can extend the supply well into the irrigation season, but cold temperatures retard the growth of crops and are not necessarily desirable.

Data collected at representative snow courses showing the snowpack as of April 1, 1969 on all courses and the snowpack on May 1 and June 1 at selected courses is presented in Table 2. This information was obtained from the Department's Bulletin No. 120-69.

Table 3 presents information on precipitation at selected stations in the service areas. The seasonal precipitation gives an indication of the related water supply available for distribution and provides a basis for comparing the current year's supply with a long-term average supply.

Streamflow

The general water supply available for diversion within each watermaster area is determined from stream gaging stations placed at key locations in the main stream channels. Several major stations are installed and maintained by the United States Geological Survey or by the Department of Water Resources as part of a Federal-State program for collection of year-round streamflow records. In addition, several stream gaging stations are installed and operated by the watermaster during the irrigation season to provide supplemental information. Also, water stage recorders are often installed by the watermaster in selected diversion ditches to further assist him in proper distribution of the various water right allotments.

Table 4 presents runoff data at selected stream gaging stations in or near the

TABLE 2

SNOWPACK AS OF APRIL 1 AND MAY 1, 1969 AT REPRESENTATIVE SNOW COURSES

Watermaster Service Area	Snow Course*	Elevation (in feet)	WATER CONTENT OF SNOW (IN INCHES)						
			April 1 Average	April 1 1969	In Percent of April 1 Average	May 1 1969**	In Percent of April 1 Average	June 1 1969**	In Percent of April 1 Average
Shackleford Creek	Parks Creek	6,700	34.0	56.3	163				
Shasta River	Middle Boulder No. 1	6,600	30.5	45.6	149	35.0	115		
	Little Shasta	6,200	20.0	26.6	133				
Ash Creek	Blue Lake Ranch	7,300	9.9	16.7	169				
Big Valley	Eagle Peak	7,200	15.6	20.1	129				
North Fork Pit River	Cedar Pass	7,100	16.7	23.6	141				
South Fork Pit River	Adin Mountain	6,350	13.2	20.2	153	9.6	48		
Surprise Valley									
Burney Creek	Thousand Lakes	6,500	35.7	58.4	163	51.8	89		
Cow Creek	New Manzanita Lake	5,900	7.7	18.4	240	3.2	17		
Digger Creek	Burney Springs	4,700	2.4	7.8	324				
Hat Creek									
Butte Creek	Humbug Summit	4,850	11.6	30.1	260				
Susan River	Silver Lake Meadows	6,450	27.6	57.4	209	47.0	82		
	Fredonyer Pass No. 1	5,750	8.8	22.9	260				
Indian Creek	Independence Lake	8,450	40.3	66.5	165	68.0	102		
Middle Fork Feather	Mount Oeyer No. 1	7,100	24.3	43.7	180	36.0	82	7.0	16
River	Rowland Creek	6,700	17.4	32.7	188	26.8	82	0.0	
	Yuba Pass	6,700	30.4	61.3	202	47.6	78		

* Snow courses are listed according to elevation within each major grouping of watermaster service areas. They do not necessarily correspond to a specific service area.

** Data collected for selected courses.

TABLE 3

PRECIPITATION AT SELECTED STATIONS - 1968-69 SEASON

Station Name	County	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Percent Of Mean
Fort Jones Ranger Station	Siskiyou	1.34	2.99	5.20	7.98	1.85	0.23	0.64	0.52	1.31	0.53	0.00	0.24	22.83	105
		1.59	2.77	4.02	4.06	3.14	2.21	0.98	1.11	0.81	0.35	0.34	0.40	21.78	
Happy Camp Ranger Station	Siskiyou	3.65	8.47	15.97	15.93	6.56	1.60	1.40	0.87	0.94	0.82	0.00	0.46	56.67	103
		4.07	7.25	10.41	11.31	8.24	6.45	2.72	2.16	1.06	0.38	0.17	0.74	54.96	
Yreka	Siskiyou	0.91	2.53	4.36	6.65	1.25	0.45	1.09	0.44	2.88	0.05	0.00	0.15	20.76	122
		1.45	2.00	3.30	3.19	2.29	1.61	0.92	1.03	0.86	0.27	0.39	0.45	17.76	
Chico Experiment Station	Butte	2.46	3.48	7.12	10.53	8.59	1.77	2.62	0.00	0.75	0.05	0.00	0.00	37.37	143
		1.46	2.41	5.12	5.03	4.43	3.29	2.31	1.16	0.44	0.01	0.01	0.33	26.06	
Redding Fire Station No. 2	Shasta	3.11	5.05	13.72	10.11	12.82	2.01	2.64	0.03	0.44	0.00	0.00	0.28	50.21	132
		2.27	3.76	7.26	7.69	6.19	4.90	2.95	1.74	1.31	0.11	0.13	0.61	38.92	
Hat Creek Power House No. 1	Shasta	1.08	2.26	5.79	6.72	3.49	0.73	1.15	0.15	2.07	0.15	0.00	0.04	23.63	131
		1.30	1.83	2.93	2.85	2.84	2.02	1.35	1.26	0.77	0.28	0.16	0.47	18.06	
Bieber, Babcock Ranch	Lassen	1.30	5.32	2.05	5.32	0.80	0.37	1.46	0.71	0.10	0.33	0.00	0.00	17.76	*
		*	*	*	*	*	*	*	*	*	*	*	*	*	
Lakeview, Oregon	Lake	0.89	3.08	1.80	5.61	1.33	0.72	0.89	0.34	3.31	0.01	0.00	0.09	18.07	125
		1.21	1.37	1.88	1.84	1.71	1.52	1.15	1.51	1.28	0.22	0.17	0.58	14.44	
Alturas Ranger Station	Modoc	0.42	2.17	0.98	4.24	0.93	0.53	1.11	0.29	3.35	0.09	0.00	T	14.11	110
		1.07	1.35	1.63	1.62	1.45	1.37	1.03	1.31	1.03	0.31	0.22	0.43	12.82	
Jess Valley	Modoc	0.69	3.71	2.00	4.01	0.81	1.61	1.98	0.40	2.44	0.16	T	0.05	17.86	103
		1.31	1.66	1.92	1.89	1.95	1.88	1.64	2.02	1.62	0.41	0.26	0.66	17.22	
Cedarville	Modoc	0.85	2.43	1.23	4.27	1.30	0.60	1.00	0.24	1.05	0.22	0.00	0.20	13.39	104
		1.17	1.41	1.69	1.84	1.50	1.45	0.99	1.04	0.94	0.33	0.15	0.37	12.88	
Susanville Airport	Lassen	0.26	2.47	3.85	7.79	2.55	0.36	0.54	0.34	1.69	0.13	0.00	T	19.98	138
		0.92	1.51	2.56	2.53	2.51	1.51	0.82	0.83	0.67	0.18	0.09	0.35	14.48	
Greenville Ranger Station	Plumas	2.26	5.03	11.68	21.98	9.16	1.44	2.94	0.50	2.70	0.00	0.00	0.09	57.78	135
		2.61	4.81	5.93	8.89	7.44	6.47	2.84	1.71	0.75	0.35	0.21	0.95	42.96	
Sierraville Ranger Station	Sierra	1.82	3.26	5.31	16.68	5.89	0.64	1.76	0.49	2.78	0.25	0.00	0.01	38.89	153
		1.83	2.76	4.49	4.94	4.23	2.84	1.63	1.25	0.54	0.29	0.15	0.44	25.39	
Vinton	Plumas	0.26	2.77	1.84	8.35	1.80	0.19	0.63	0.67	1.67	0.03	0.00	0.01	18.22	141
		0.89	1.44	2.12	1.94	1.87	1.43	0.84	1.01	0.50	0.36	0.18	0.25	12.83	

* Data unavailable.

Note; Figures above line are for current season; below line are long-term averages.

TABLE 4
RUNOFF AT SELECTED STATIONS
1968-69 SEASON
(In acre-feet)

Station	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Average	Percent Average
Shasta River near Yreka	9,030	10,920	13,670	30,950	18,660	15,630	13,330	7,540	7,540	4,460	2,090	4,800	138,620	127,400	109
Hat Creek near Hat Creek	7,810	8,080	8,130	8,910	7,820	8,310	9,380	15,530	15,800	10,490	8,860	8,640	117,760	94,840	124
Pit River near Canby	3,810	7,000	7,030	52,820	38,230	39,750	63,970	45,470	19,600	3,770	3,530	6,010	290,990	164,300	177
South Fork Pit River near Likely	2,370	1,290	1,110	3,350	1,560	2,260	10,970	28,080	10,770	4,890	9,420	5,160	81,230	51,910	156
Susan River at Susanville	436	920	1,380	15,270	4,960	9,630	31,180	40,820	8,490	4,750	1,550	1,870	121,260	69,070	176
Indian Creek near Crescent Mills	3,580	7,620	16,030	150,870	53,650	69,840	220,200	153,900	38,250	7,180	2,030	2,260	725,410	385,900	188
Middle Fork Feather River near Clio	2,380	5,330	8,020	115,000	33,560	71,590	107,300	71,760	29,640	8,270	3,420	2,190	458,460	196,900	233
Butte Creek near Chico	8,740	11,620	29,630	128,000	81,280	42,040	57,150	56,550	23,250	12,850	10,430	9,640	471,180	282,300	167

service areas. Runoff data at stream gaging stations used by the watermasters are contained in tables following the description of each area. These data are used in conjunction with schedules showing total water rights to determine the adequacy or shortage of the water supply.

Essentially all watermaster service areas experienced above-average water supplies during the 1969 irrigation season. In some areas total streamflow runoff between April 1 and September 30 was at or near record levels.

PART II - 1969 WATERMASTER SERVICE

This part of the report gives a general geographical description of each watermaster service area and the major sources of water supply therein. The usual methods of distribution of the water supply of the 1969 season are discussed. Special occurrences in some areas are also mentioned.

Ash Creek Watermaster Service Area

The Ash Creek service area is located in Modoc and Lassen Counties near the town of Adin. There are 32 water right owners in this area with total allotments of 123.65 cubic feet per second.

The major sources of water supply for the service area are Ash Creek and three tributaries, Willow Creek, Rush Creek, and Butte Creek. Ash Creek rises in the eastern part of the service area and flows westerly through the town of Adin into Ash Creek Swamp and then into the Pit River. Rush Creek heads in the northeastern part of the service area and joins Ash Creek above the town of Adin. Willow Creek and Butte Creek originate in the southeastern part of the service area and join Ash Creek near the head of Ash Creek Swamp. Each of these streams is independently regulated.

Approximately 85 percent of the water rights in the service area are in Big Valley, west of the town of Adin. The remaining water rights are along the upstream tributaries and in Ash Valley. The portion of Big Valley served is approximately 10 miles long by 6 miles wide, extending from the town of Adin to the confluence of Ash Creek and the Pit River. The valley floor is at an elevation of approximately 4,200 feet.

A schematic drawing of each major stream system within the Ash Creek service area is presented as Figure 2, page 13.

Water Supply

The water supply for Ash and Rush Creeks is derived primarily from snowmelt, since most of the watershed is between 5,000 and 6,000 feet in elevation. Willow Creek and Butte Creek receive a substantial portion of their water from springs. These creeks normally have sufficient water to satisfy demands until about June 1, after which the supply decreases rapidly. By the latter part of June, Ash Creek normally has receded to about 20 cubic feet per second, Rush Creek to about two cubic feet per second, Willow Creek to about five cubic feet per second, and Butte Creek to less than one cubic foot per second. The flow of these creeks then remains nearly constant for the remainder of the season.

The daily mean discharge of Ash Creek at Adin is presented in Table 5, page 12. This stream gaging station is located below a substantial number of the points of diversion; consequently, the table does not include all of the available supply of this creek.

No stream gaging stations were installed on Butte, Rush, or Willow Creeks during the 1969 season.

Method of Distribution

Irrigation diversions from Ash Creek and its tributaries are accomplished by small dams placed in the stream channels. Most of the users have several diversion ditches at these dams. These ditches convey the water to the fields where it is spread by means of small laterals. Some of the users employ a system of checks and borders, but most of the land is irrigated by wild flooding. Return flow is captured by downstream ranches for reuse. In one case a rancher may recirculate his drain water before returning it to the creek for further use. In a few areas, pumps are used to divert the water into ditches or through sprinkler systems.

The Ash Creek decree (see Table 1) establishes the number of priority classes on the various stream systems within the Ash Creek service area as follows: Ash Creek - five; Willow Creek - four; Rush Creek - one; and Butte Creek - two.

1969 Distribution

Watermaster service began May 1 in the Ash Creek service area and continued until September 30. Lynn W. Peterson, Water Resources Technician II, was watermaster during this period.

Willow Creek. The available water supply in Willow Creek was sufficient to satisfy all allotments (four priorities) until late May. The flow then dropped rapidly, causing regulation of second priority allotments to begin during the first week in June. Throughout the remainder of June and continuing until late August the flow receded gradually. At this time, and for the remainder of the season, about 60 percent of the second priority allotments were served.

Butte Creek. The available water supply in Butte Creek was sufficient to satisfy all allotments (two priorities) until late spring. During the remainder of the season the flow gradually decreased; however, no distribution problems were encountered.

Ash Creek. The available water supply in Ash Creek was sufficient to meet all demands (five priorities) until the latter part of June. For most of the irrigation season, water was available for first priority allotments only.

Rush Creek. The available water supply in Rush Creek was sufficient to satisfy all allotments (one priority) until the end of July. By late September the flow had gradually decreased to about 75 percent of all allotments.

ASH CREEK WATERMASTER SERVICE AREA

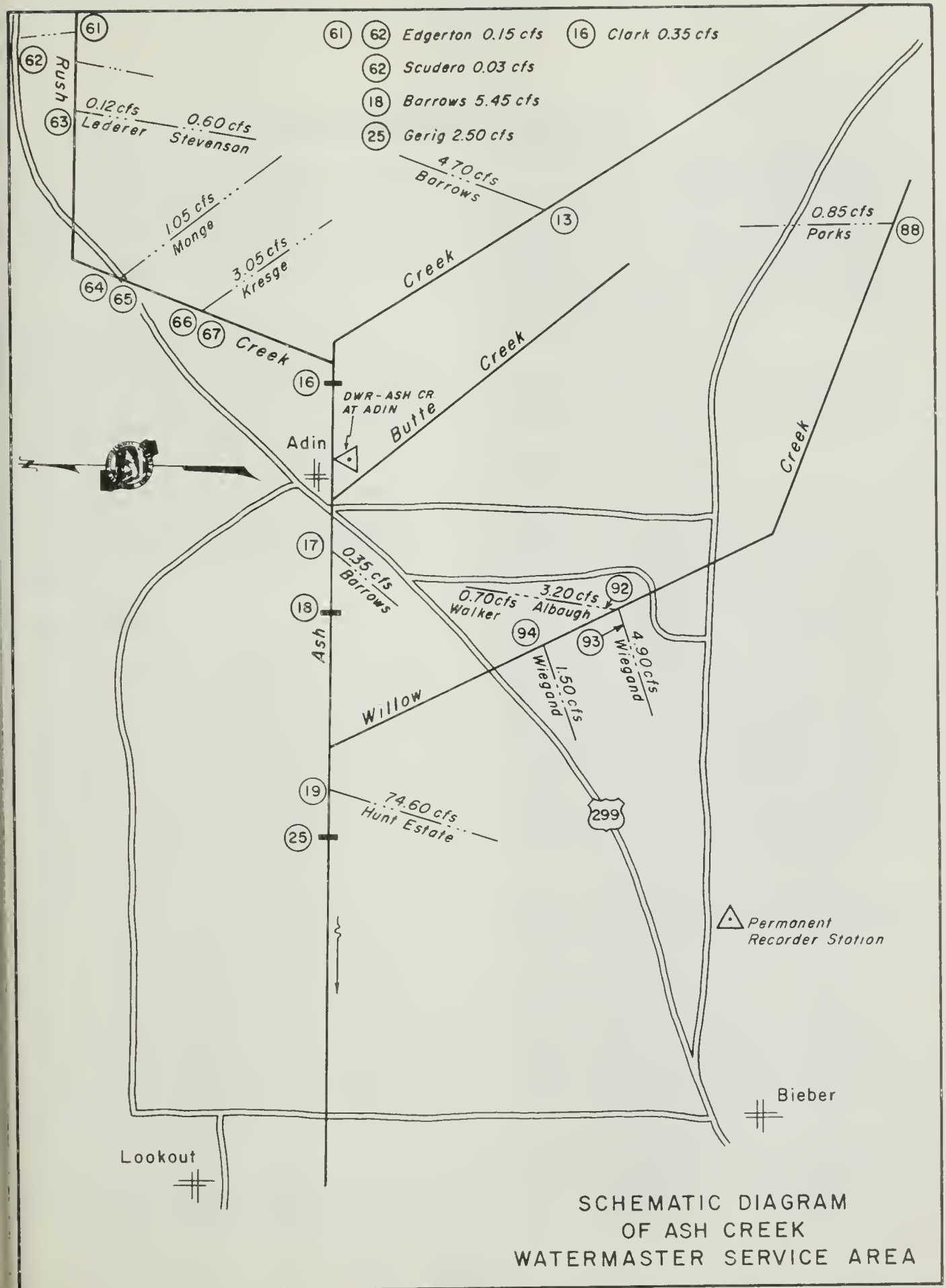
1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 5

ASH CREEK AT AOIN

Day	March	April	May	June	July	August	September	Day
1	88	1190	217	34	24	24	9.1	1
2	86	947	198	30	22	36	7.0	2
3	86	714	197	29	21	44	7.0	3
4	83	588	187	28	19	27	7.0	4
5	84	563	177	50	19	21	5.6	5
6	88	551	179	30	21	22	7.0	6
7	82	507	192	25	22	21	8.6	7
8	77	419	185	27	22	20	9.1	8
9	78	368	184	37	22	20	10	9
10	72	350	179	45	26	20	12	10
11	69	348	179	46	28	20	13	11
12	71	360	171	31	25	20	13	12
13	71	356	165	28	23	20	16	13
14	76	348	154	41	22	19	16	14
15	93	310	144	43	22	19	16	15
16	133	283	128	34	21	19	17	16
17	264	276	111	25	21	22	18	17
18	348	368	103	28	23	23	19	18
19	274	330	98	42	24	23	20	19
20	224	330	92	55	26	16	21	20
21	283	328	84	45	27	17	20	21
22	460	328	77	35	25	19	19	22
23	492	348	66	29	25	17	19	23
24	503	373	61	28	25	16	20	24
25	583	356	58	27	21	17	28	25
26	726	291	51	28	14	16	23	26
27	846	236	49	29	20	18	22	27
28	986	219	44	33	23	15	22	28
29	1080	227	36	29	23	11	22	29
30	1180	219	36	27	27	11	22	30
31	1280		36		24	11		31
Mean	351	414	124	33.9	22.8	20.1	15.6	Mean
Runoff In Acre-Feet	21550	24660	7610	2020	1400	1240	929	Runoff In Acre-Feet

FIGURE 2



SCHEMATIC DIAGRAM
OF ASH CREEK
WATERMASTER SERVICE AREA

Big Valley Watermaster Service Area

The Big Valley service area is located in Modoc and Lassen Counties in the vicinity of the towns of Lookout and Bieber. There are 53 water right owners in the area with total allotments of 231.03 cubic feet per second.

The Pit River is the major source of water supply for the service area. The river enters the valley north of the town of Lookout and flows southerly through the western part of the valley and out its southern end. The major place of use is about 13 miles of valley floor along the Pit River at an approximate elevation of 4,200 feet.

A schematic drawing of the Big Valley stream system is presented as Figure 3, page 18.

Water Supply

The available water supply in the Pit River as it flows through Big Valley is ordinarily adequate to satisfy all demands until about June 1. The irrigation practices in Hot Springs Valley, located about 20 miles upstream from Big Valley, have a significant effect on the available water supply in Big Valley throughout the remainder of the irrigation season. Water users in Hot Springs Valley divert most of the flow in Pit River for two-or three-week periods. Natural flow available for use in Big Valley during these periods is often less than 20 cubic feet per second. Periodic releases from channel storage reservoirs in the lower end of the valley sometimes increase the flow to as much as 200 to 300 cubic feet per second for relatively short periods. Consequently, equitable water distribution in Big Valley is very difficult to attain.

Roberts Reservoir, located on a minor tributary of the Pit River at the upper end of Big Valley above Lookout, serves as a supplemental source of water to those users in the area who are members of the Big Valley Mutual Water Company. Water from this reservoir is released into the Pit River and distributed to members of the water company along with the natural flow to which they are entitled.

Records of two stream gaging stations in the Big Valley service area are presented in Tables 6 and 7, page 17.

Method of Distribution

Most water users in the Big Valley service area irrigate on a rotation schedule by either wild flooding or by checks and borders. Large flashboard dams placed in the channel make it possible to use the large heads of water characteristic of the supply in the area. In addition, some pumps are used for diversion, both in ditches and directly into sprinkler systems. The ranches which irrigate by wild flooding must use large heads of water in order to cover unleveled or high ground. Much of the runoff is recaptured for use by downstream lands, resulting in a relatively high irrigation efficiency for the valley.

The Big Valley decree (see Table 1) provides for the distribution of water from Pit River in four priority classes.

1969 Distribution

Watermaster service began in the Big Valley service area on May 1 and continued through September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

The season began with West Valley and Big Sage Reservoirs at full capacity and a good snowpack in the Warner

Mountains. In mid-June a warm rainstorm hit the area. This storm depleted most of the snowpack and raised the flows in the Pit River to 900 cubic feet per second.

An irrigation rotation, which had begun on May 20, was just being completed when the storm occurred in the Warner Mountains, bringing rain up to the 6,000-foot elevation. All the flashboard dams in Big Valley had to be pulled to allow the large flows on the Pit River to pass through the valley without damaging the irrigation systems. Even so, some levees and culverts in the lower part of the valley were damaged.

Two irrigations were completed prior to the start of the haying season. The lower users that do not raise hay were provided a third irrigation from excess water released by the upper users while they were dried up for the haying.

By July 21 the haying process was completed, so the river dams were sealed and storage began increasing. Since the available water was in extremely short supply, the first rotation after haying was based on only 10 acre-feet per second-foot of water rights. Most of this water was used to fill the sloughs on the various ranches, although some pasture land was irrigated.

This rotation took 29 days. The Roberts Reservoir shareholders combined their reservoir water and their river allotment to obtain a complete irrigation. The McArthur and Britten ranches in the lower part of the valley also received a full irrigation by combining their allotment with released water from their newly completed Iverson Reservoir.

Three additional irrigations were completed by September 30, the end of the watermaster season. These irrigations were based on a 12.5 acre-feet per second-foot ratio, a 15 acre-feet per second-foot ratio, and a full irrigation.

From July 27 to September 5, Roberts Reservoir water was released for use by shareholders as follows:

Name	Acre-feet
Eicholz Ranch	100
Cyril Mamath	87
D. Babcock & C. Hawkins	265
Oral (Sam) Gerig	167
Norris Gerig	135
Hunt Estate	88
L. W. Kramer	101
M. Kennedy	50
Total	993

BIG VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 6

PIT RIVER NEAR CANBY

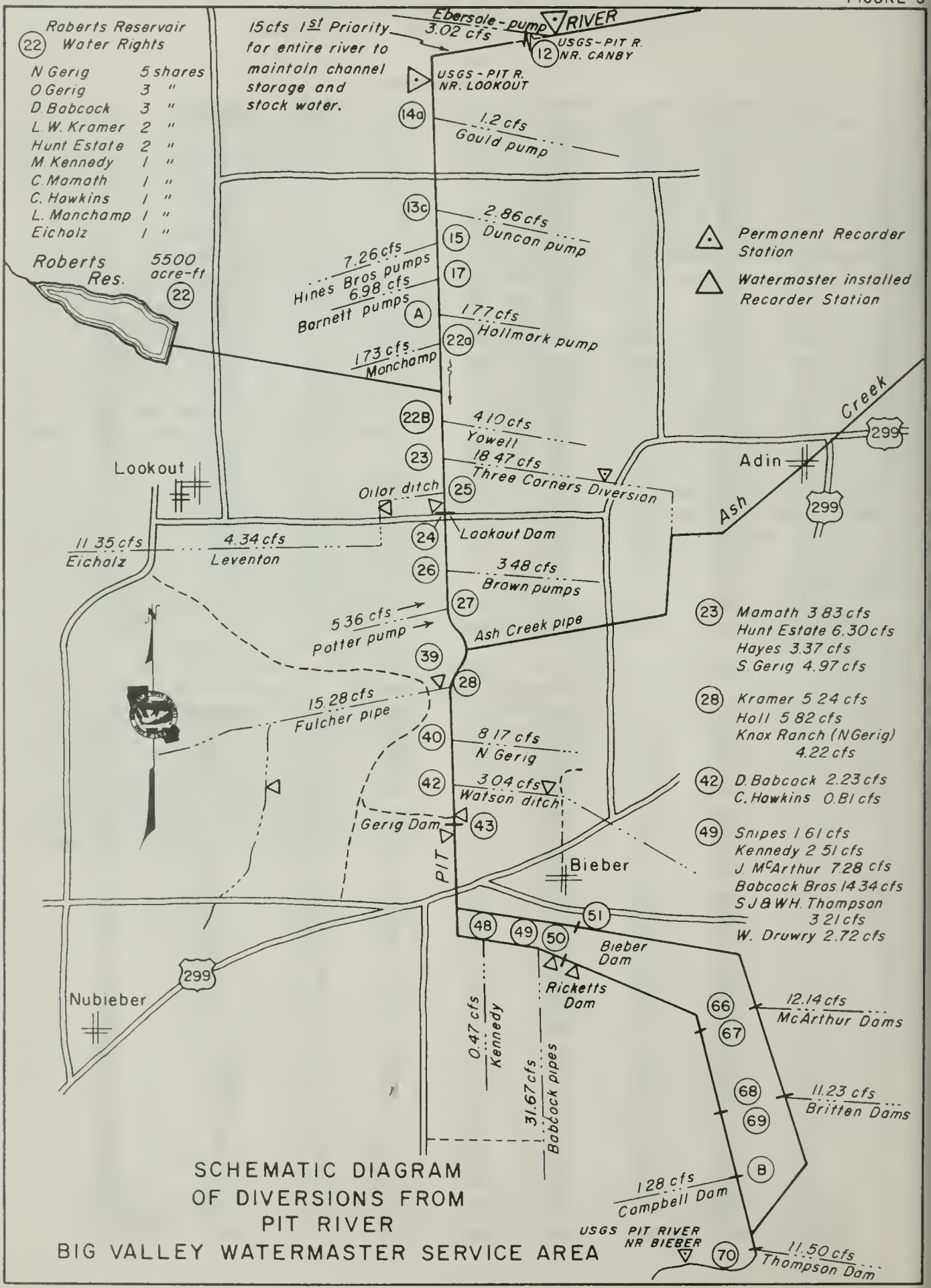
Day	March	April	May	June	July	August	September	Day
1	307	2080	899	328	174	30	32	1
2	295	2050	868	301	135	30	31	2
3	273	1900	851	212	107	26	38	3
4	267	1680	845	250	93	21	42	4
5	273	1430	834	212	89	18	87	5
6	281	1230	804	176	86	18	158	6
7	272	1160	745	176	81	19	152	7
8	253	1070	697	162	80	28	118	8
9	244	947	539	194	80	31	127	9
10	223	859	557	183	75	36	93	10
11	199	824	694	328	72	76	69	11
12	211	774	762	746	86	180	70	12
13	204	823	956	753	87	109	75	13
14	189	849	1070	572	69	83	120	14
15	188	832	1000	488	54	71	134	15
16	198	796	986	425	45	81	122	16
17	257	731	975	400	37	73	107	17
18	464	749	935	353	42	66	99	18
19	753	811	915	362	70	64	98	19
20	715	862	859	365	70	62	96	20
21	623	874	759	384	67	58	95	21
22	572	904	801	388	57	57	113	22
23	880	949	685	398	43	57	125	23
24	1200	1020	625	319	29	57	126	24
25	1150	1040	605	289	11	63	120	25
26	1180	1030	575	267	4.0	68	134	26
27	1380	1030	559	252	2.8	67	132	27
28	1590	1010	531	233	7.3	62	116	28
29	1710	980	498	187	11	59	106	29
30	1770	957	238	177	13	58	96	30
31	1920		257		22	53		31
Mean	646	1075	739	329	61.3	57.5	101	Mean
Runoff In Acre-Feet	39750	63970	45470	19600	3770	3530	6010	Runoff In Acre-Feet

TABLE 7

PIT RIVER NEAR BIEBER

Day	March	April	May	June	July	August	September	Day
1	540	4900	1520	264	284	2.7	0.4	1
2	570	5040	1460	225	185	2.7	0.4	2
3	600	4850	1360	58	168	2.5	0.4	3
4	570	4230	1300	26	152	2.2	0.6	4
5	545	3610	1300	27	134	2.2	0.6	5
6	525	3260	1230	34	111	2.0	0.5	6
7	570	2970	1130	34	108	1.8	0.7	7
8	540	2720	1040	17	100	1.6	1.5	8
9	525	2460	994	24	94	1.3	1.1	9
10	510	2220	900	44	90	1.2	0.9	10
11	490	2000	851	32	86	1.0	1.1	11
12	475	1880	879	36	84	0.9	5.2	12
13	470	1820	949	146	86	0.8	5.5	13
14	490	1800	1000	406	89	0.6	4.5	14
15	486	1810	1120	490	82	0.6	3.8	15
16	550	1740	1150	530	68	0.7	4.5	16
17	788	1620	1110	635	50	0.9	5.5	17
18	1380	1620	1080	550	26	1.1	4.8	18
19	1970	1640	1030	478	16	0.9	4.2	19
20	2270	1640	994	462	17	0.8	4.8	20
21	2210	1640	970	510	24	0.6	5.5	21
22	2200	1620	830	462	29	0.6	138	22
23	2480	1620	767	414	26	0.7	166	23
24	2930	1790	736	378	20	0.8	124	24
25	3250	2010	724	323	12	0.8	122	25
26	3540	2080	706	338	8.4	0.7	132	26
27	3700	1930	646	270	7.2	0.7	98	27
28	3880	1780	610	171	5.8	0.7	65	28
29	4150	1630	585	188	4.2	0.6	59	29
30	4420	1550	555	267	3.8	0.5	42	30
31	4590		418		3.5	0.4		31
Mean	1684	2383	966	261	69.8	1.2	33.4	Mean
Runoff In Acre-Feet	103600	141800	59390	15550	4310	71	1990	Runoff In Acre-Feet

FIGURE 3



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PIT RIVER
BIG VALLEY WATERMASTER SERVICE AREA

Burney Creek Watermaster Service Area

The Burney Creek service area is located in Shasta County near the town of Burney. There are 11 water right owners in the area with total allotments of 33.09 cubic feet per second. The source of water supply for this service area is Burney Creek, which enters the southern part of the service area and flows through Burney in a northerly direction to the Pit River. The portion of the valley served by this stream is approximately 11 miles long and two miles wide, and extends both north and south of Burney. The service area is at approximately 3,200 feet elevation.

A schematic drawing of the Burney Creek stream system is presented as Figure 4, page 21.

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between the elevations of 4,000 and 7,500 feet on the northeast slopes of Burney Mountain. The creek normally has sufficient water to supply all demands until about the middle of June. The supply then gradually decreases until the end of July. For the remainder of the irrigation season runoff from perennial springs keeps the flow nearly constant at approximately 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is presented in Table 8. The stream gaging station on Burney Creek is located below four points of diversion; consequently, the records do not show all of the available water supply of the creek.

Method of Distribution

The Burney Creek decree (see Table 1) sets forth a rotation schedule of distribution. The water users, however, have found it more beneficial to irrigate on a continuous-flow basis (one priority class plus surplus allotments), which is now normal practice. The water allotted to the Greer-Cornaz Ditch is distributed in accordance with supplemental court decrees.

Water is diverted from Burney Creek, in most cases by means of low diversion dams, into ditches which convey it to the place of use. Lateral ditches are then used to irrigate the land. Scott Lumber Company uses a pump and pipeline to divert its allotment for industrial use.

1969 Distribution

Watermaster service began May 1 in the Burney Creek service area and continued until September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

All allotments were distributed on a continuous-flow basis. This practice, rather than that of rotation as called for in the decree, has been used for many years by agreement of the water right owners.

The Pierpont Ranch, lowest decreed user on Burney Creek, did not irrigate during the 1969 season. Therefore, except for stockwater allotments delivered to the ranch, its irrigation water rights were apportioned among the other users on the creek.

The available water supply for the 1969 irrigation season was above normal due to the large snowpack which had accumulated during the winter and spring months. Surplus flow was available to all users until early July. All diversions were then regulated to 100 percent of first priority allotments. The supply gradually decreased

to about 70 percent of first priority allotments during mid-August.

Inflow from the many springs tributary to Burney Creek served to maintain this level for the remainder of the season. The previous very wet winter contributed heavily to the output of these springs.

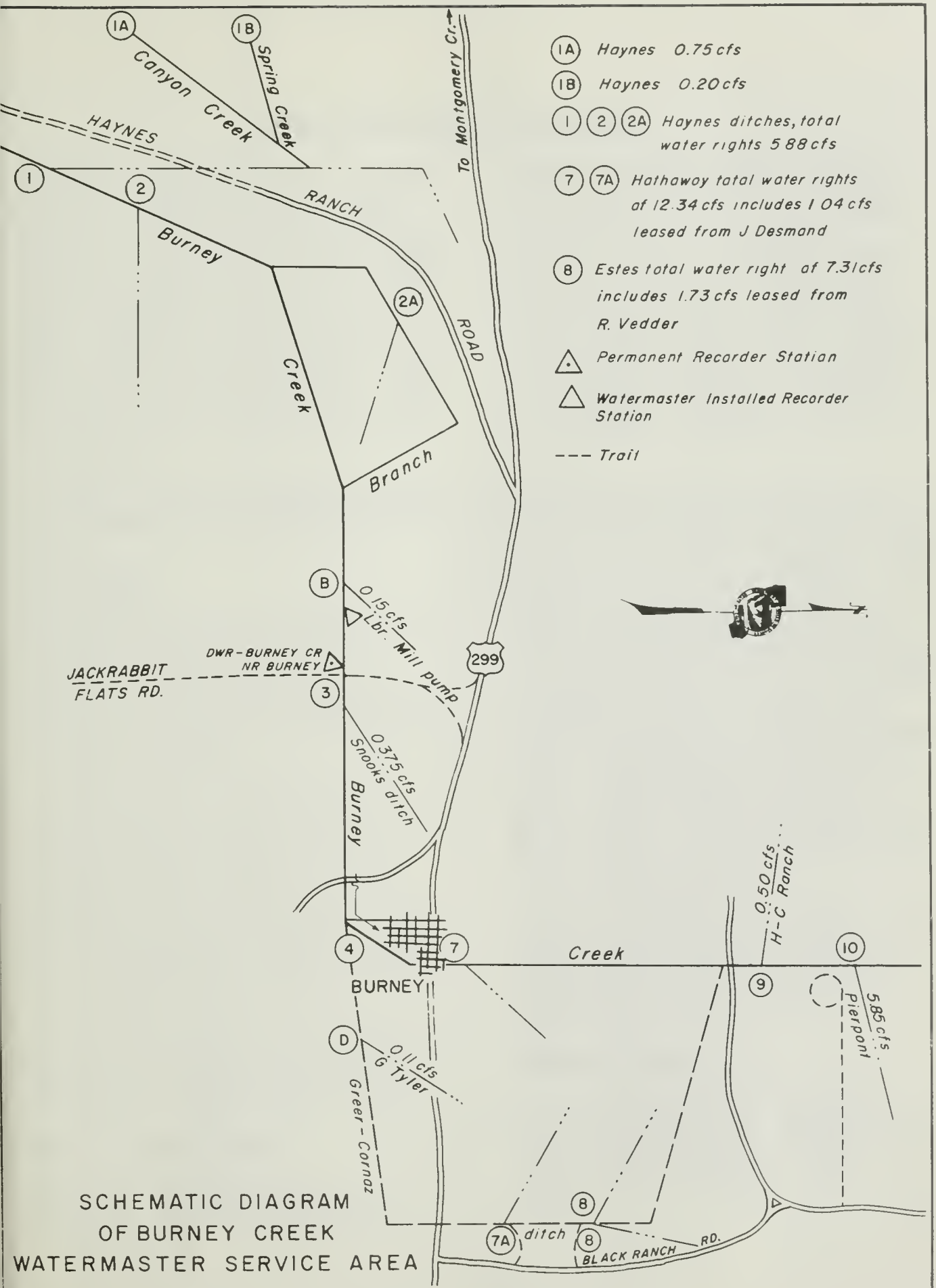
BURNEY CREEK WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 8

BURNEY CREEK NEAR BURNEY

Day	March	April	May	June	July	August	September	Day
1	99	336	316	118	40	23	16	1
2	94	306	296	110	37	24	16	2
3	91	250	288	108	36	23	16	3
4	86	218	256	105	35	23	16	4
5	81	338	260	102	34	21	16	5
6	81	288	285	97	33	21	16	6
7	79	230	318	92	33	20	16	7
8	100	210	328	94	34	20	16	8
9	92	210	346	107	34	20	16	9
10	76	204	363	108	33	19	16	10
11	62	214	366	104	31	19	16	11
12	58	242	371	102	31	18	16	12
13	60	250	363	96	30	17	16	13
14	64	228	336	85	28	17	16	14
15	99	210	290	78	28	17	16	15
16	75	214	264	72	28	16	16	16
17	70	238	258	68	28	16	16	17
18	86	360	258	66	28	16	17	18
19	96	313	242	63	27	17	17	19
20	97	316	214	62	27	17	18	20
21	99	340	200	60	27	17	18	21
22	99	373	198	59	26	17	18	22
23	100	449	196	57	25	17	18	23
24	102	336	198	51	24	16	18	24
25	102	288	192	47	23	17	18	25
26	110	262	190	45	23	17	17	26
27	118	260	181	43	22	17	17	27
28	156	268	159	43	23	17	16	28
29	166	303	145	41	23	17	16	29
30	172	303	136	40	23	17	16	30
31	256		132		23	17		31
Mean	101	279	256	77.4	28.9	18.4	16.5	Mean
Runoff In Acre-Feet	6200	16580	15760	4610	1780	1130	984	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF BURNEY CREEK
WATERMASTER SERVICE AREA

Butte Creek Watermaster Service Area

The Butte Creek service area is located in Butte County southeast of the City of Chico. There are 34 water right owners in the area with total allotments of 329.71 cubic feet per second. Butte Creek is the major source of water supply. The watermaster service area extends for about 11 miles along Butte Creek, commencing approximately four miles east of Chico and extending downstream to the crossing of Western Canal. It contains about 20,000 acres of valley floor lands at an average elevation of 150 feet.

A schematic drawing of the Butte Creek stream system is presented as Figure 5, page 27.

Water Supply

Butte Creek, above the watermaster service area, drains approximately 150 square miles of the western slope of the Sierra Nevada Mountains in the northeasterly portion of Butte County. The maximum elevation in the watershed is about 7,000 feet.

Snowmelt normally produces sustained high flows in the creek until about the end of June, after which perennial springs continue to produce flows of more than 40 cubic feet per second. Additional water is imported for distribution from the West Branch Feather River by means of the Hendricks (Toad Town) Canal through De Sabla Reservoir and Powerhouse into Butte Creek.

Records of the daily mean discharge at stream gaging stations in the Butte Creek service area are presented in Tables 9, 10, and 11, pages 24 and 25.

Method of Distribution

Water is diverted from Butte Creek by pumping and by gravity diversions. Parrott Investment Company, M & T Incorporated, Dayton Mutual Water Company, and Durham Mutual Water Company divert relatively large amounts of water by gravity into ditches leading to their individual distribution systems. Various methods of irrigation are in general practice. These include contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in popularity within the past few years, especially for use on orchards.

Water diverted to Butte Creek from the West Branch Feather River through the Hendricks Canal and De Sabla Powerhouse at times causes wide fluctuation in the Butte Creek flow. In accordance with "Memorandum and Order" entered May 10, 1949, by the Superior Court of Butte County, water users below Parrott Dam (where the imported water is rediverted) must be provided their natural flow allotments at all times without undue fluctuation caused by intermittent presence of imported water. For the past several years PG&E has maintained reasonably steady releases. Because of damage to some of their facilities, fluctuations in 1968 were greater than usual. However, their releases in 1969 were steady once again.

The Butte Creek decree (see Table 1) established three priority classes for summer distribution purposes and, in addition, defined two surplus flow allotments.

1969 Distribution

Watermaster service began June 26 in the Butte Creek service area, and continued until October 2. Harold B. German, Associate Engineer, Water Resources, was watermaster during this period.

The available water supply for the 1969 irrigation season was considerably above normal. Some water was available for the two higher surplus class users throughout the season. This is an extremely unusual situation.

Special Occurrences

Several applications to appropriate surplus water during the spring months have been approved by the State Water Resources Control Board, subject to regulation and distribution by State watermaster service. Consequently, during the 1970 season, watermaster service will probably begin in late April, at least a month earlier than usual.

Measuring devices planned for construction and installation during the coming year are: an 8-foot Parshall flume in the Parrott Investment Company lateral from Edgar Slough; a 10-foot Parshall flume in Edgar Slough near Crouch Avenue; a flow meter at the Newhall Land and Farming Company diversion; a flow meter at the Gorrill Land Company diversion; and repair of several small structures.

BUTTE CREEK WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 9

BUTTE CREEK NEAR CHICO

Day	March	April	May	June	July	August	September	Day
1	1330	1020	961	571	263	178	161	1
2	1070	975	923	543	260	177	158	2
3	960	949	929	527	257	175	161	3
4	844	850	843	516	254	179	160	4
5	767	1550	860	498	252	174	159	5
6	725	1380	988	486	248	175	157	6
7	685	1120	1090	460	241	174	157	7
8	647	987	1120	440	226	173	161	8
9	613	919	1170	443	221	173	161	9
10	581	849	1260	429	216	172	159	10
11	544	849	1290	447	210	172	160	11
12	519	903	1250	414	207	171	160	12
13	497	869	1200	403	203	169	166	13
14	479	838	1130	398	204	168	169	14
15	477	791	996	387	206	170	170	15
16	489	774	964	392	201	170	172	16
17	515	802	952	360	195	170	172	17
18	542	893	957	350	189	170	172	18
19	556	880	933	365	192	169	173	19
20	561	906	858	345	191	168	175	20
21	635	969	816	330	188	167	177	21
22	605	1050	804	316	189	165	175	22
23	610	1280	795	307	193	165	171	23
24	614	1090	783	302	196	164	160	24
25	617	938	746	293	189	164	183	25
26	633	860	742	289	187	165	174	26
27	679	821	699	280	183	165	155	27
28	734	823	645	280	181	165	133	28
29	791	908	609	280	179	164	120	29
30	881	968	601	271	179	163	127	30
31	994		595		179	163		31
Mean	684	960	920	391	209	170	162	Mean
Runoff In Acre-Feet	42040	57150	56550	23250	12850	10430	9640	Runoff In Acre-Feet

BUTTE CREEK WATERMASTER SERVICE AREA

1989 Daily Mean Discharge in Cubic Feet Per Second

TABLE 10

BUTTE CREEK NEAR DURHAM

Day	March	April	May	June	July	August	September	Day
1	1350	1080	853	335	111	20	5.0	1
2	1060	1030	789	286	107	26	4.1	2
3	996	1020	809	270	95	14	3.5	3
4	890	907	712	271	85	8.3	4.4	4
5	798	1680	691	271	90	5.7	4.6	5
6	758	1530	802	267	96	4.9	4.6	6
7	720	1220	935	260	86	7.7	4.5	7
8	689	1080	1010	260	73	13	4.9	8
9	664	1020	1070	265	65	16	6.7	9
10	644	945	1160	261	62	27	7.5	10
11	644	939	1180	312	57	21	10	11
12	655	999	1140	280	58	9.1	20	12
13	622	959	1090	262	53	18	19	13
14	575	928	999	254	46	19	21	14
15	554	868	827	232	50	20	34	15
16	539	839	775	240	58	22	46	16
17	532	865	748	194	57	21	57	17
18	531	970	772	168	37	22	66	18
19	521	955	742	183	33	26	81	19
20	497	963	707	151	43	24	83	20
21	563	1010	657	114	48	23	76	21
22	531	1120	636	92	45	22	70	22
23	535	1330	625	72	55	23	105	23
24	542	1110	618	62	84	23	94	24
25	550	945	573	45	47	22	145	25
26	569	832	567	36	23	15	106	26
27	628	783	520	26	23	10	87	27
28	705	767	446	25	22	9.4	56	28
29	783	866	404	23	23	11	47	29
30	885	928	385	97	23	9.0	45	30
31	1020		380		22	5.6		31
Mean	695	1016	762	187	57.3	16.7	43.9	Mean
Runoff In Acre-Feet	42700	60500	46800	11100	3520	1030	2610	Runoff In Acre-Feet

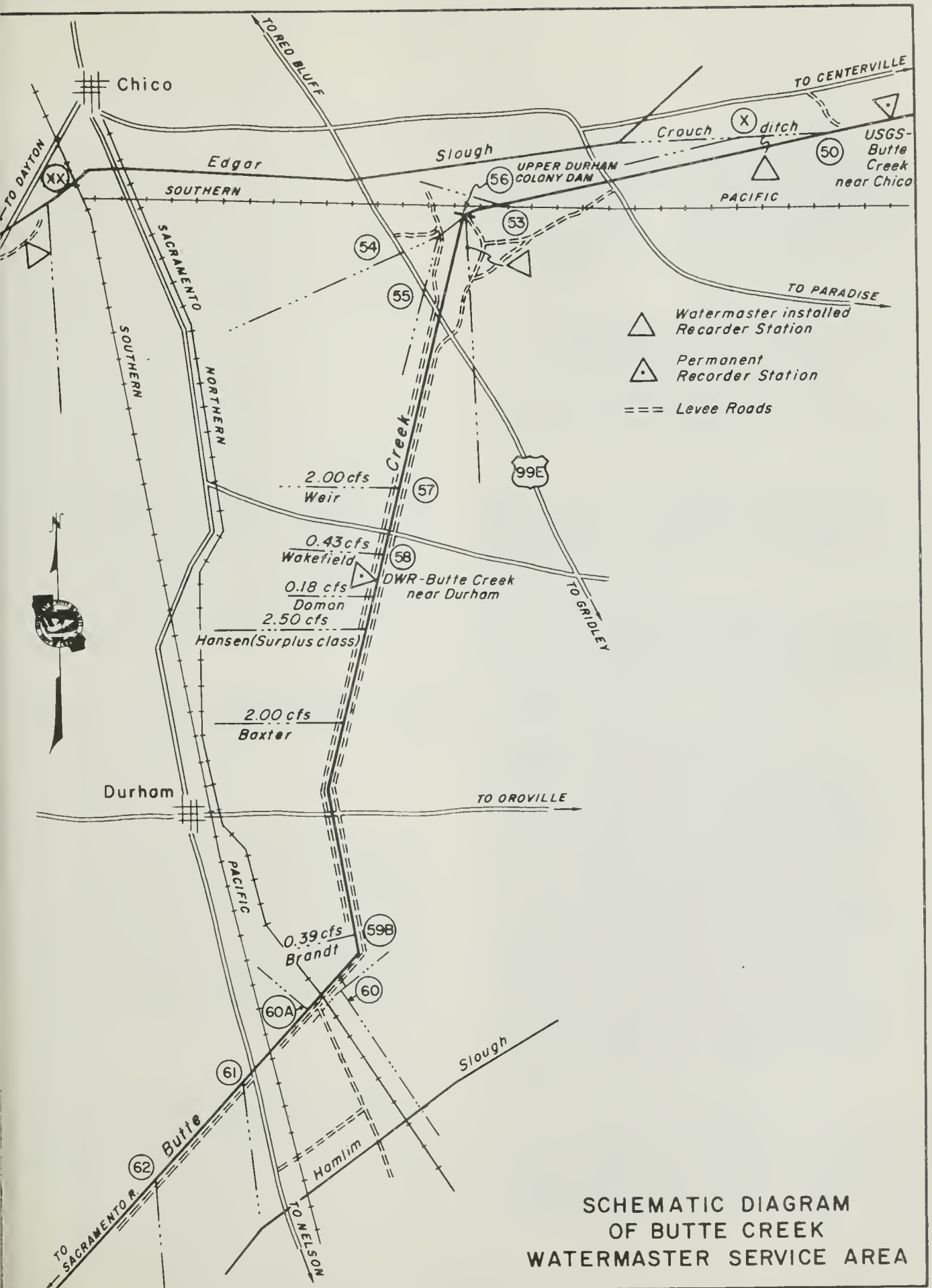
TABLE 11

TOADTOWN CANAL ABOVE BUTTE CANAL

Day	March	April	May	June	July	August	September	Day
1	123	125	125	117	114	78	75	1
2	119	123	125	116	116	77	76	2
3	119	124	124	116	114	76	76	3
4	119	123	124	116	114	76	76	4
5	118	126	123	116	111	78	74	5
6	120	123	122	116	109	78	74	6
7	119	122	120	116	105	77	74	7
8	116	124	123	116	91	77	78	8
9	114	124	125	117	90	78	78	9
10	114	123	124	117	86	78	76	10
11	113	124	122	119	84	78	78	11
12	111	126	118	117	83	77	79	12
13	110	125	118	117	83	76	88	13
14	110	124	118	116	85	76	90	14
15	115	124	117	117	86	79	91	15
16	117	124	117	116	85	81	92	16
17	119	126	116	114	77	78	91	17
18	120	126	117	117	76	78	89	18
19	119	125	117	119	79	78	92	19
20	119	124	117	118	78	78	92	20
21	124	125	116	118	78	77	92	21
22	122	125	116	116	83	77	90	22
23	119	129	118	117	84	76	92	23
24	117	128	117	116	83	76	91	24
25	124	125	118	113	81	76	92	25
26	124	123	118	110	78	76	89	26
27	124	124	118	113	78	76	55	27
28	124	123	118	119	76	76	45	28
29	124	118	117	118	76	75	43	29
30	124	119	117	116	77	75	43	30
31	124		117		78	76		31
Mean	119	124	119	116	88.3	74.6	79.0	Mean
Runoff In Acre-Feet	7310	7390	7340	6920	5430	4590	4700	Runoff In Acre-Feet

Diversion #	Water Right Owner	Amount in cfs	Remarks
Butte Creek			
50	M. & T. Incorporated	53.33	Imported water*
	M. & T. Incorporated	25.00	Surplus class
	Parrott Investment Company	53.33	Imported water*
	Parrott Investment Company	25.00	Surplus class
	Taylor	3.00	
X	Dayton Mutual Water Company	16.00	
XX	Dayton Mutual Water Company	3.33	Imported water*
	*Water imported by PG&E from West Branch Feather River via Hendricks Canal and released into Butte Creek, less 5% for conveyance losses.		
53	U. S. Department of Agriculture	2.00	
54	Patrick	3.33	
	Lavy	1.89	
	Smith	0.555	
	Towne and Jayred	1.115	
55	Camenzind Brothers	3.11	
56	Durham Mutual Water Company	44.70	
	Parrott Investment Company	2.00	
	Carlson	0.48	
	Bell	0.39	
	Domom Brothers	0.67	
	Logan	0.01	
	Vernoga	1.447	
	Konyn	0.40	
	Bebich	0.446	
	Setka	0.447	
	Wheelock	0.26	
	Total	51.25	
60	Newhall Land & Farming Company	6.75	
	Newhall Land & Farming Company	21.25	Surplus class
60A	Phillips	0.66	
61	Gorrill Land Company	1.00	
	(see Hamlin Slough)	20.70	Surplus class
62	White	1.00	
		9.50	Surplus class
Hamlin Slough			
	Newhall Land & Farming Company	16.60	
	Gorrill Land Company	21.70	
	(Total diversions from Butte Creek and Hamlin Slough not to exceed 21.70 cfs).		

FIGURE 5



SCHEMATIC DIAGRAM
OF BUTTE CREEK
WATERMASTER SERVICE AREA

Cow Creek Watermaster Service Area

The Cow Creek service area is located in Shasta County in the foothills east of Redding. There are 89 water right owners in the area with total allotments of 56.367 cubic feet per second. The major streams in this area are: North Cow Creek (commonly called Little Cow Creek), Cedar Creek (a tributary to North Cow), Oak Run Creek, and Clover Creek. These creeks, which are all tributaries of Cow Creek, flow in a westerly or southwesterly direction through narrow valleys joining Cow Creek near the town of Palo Cedro. The service area is located in the narrow valleys along the several creeks and consists of small parcels separated by brush-covered hills in the lower elevations. There are dense coniferous forests in the higher regions. The entire area is about 25 miles long by 10 miles wide and varies in elevation between about 500 and 4,000 feet.

A schematic drawing of each major stream system in the Cow Creek service area is presented as Figures 6 through 6c, pages 32 through 35.

Water Supply

Water supply for this service area is derived mostly from springs and seepage, with some early snowmelt runoff. A considerable portion of the watershed consists primarily of low brushy hills which do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter normally produce substantial springs and seepage that flow throughout the irrigation season.

Cedar Creek flow is usually sufficient to supply all allotments until about July 15. Thereafter, it steadily decreases throughout the remainder of the season.

The flow of North Cow Creek in average years is adequate to supply nearly 100 percent of all allotments. In dry years it is necessary to reduce allotments up to 50 percent during the latter part of the summer.

The flow of Oak Run Creek is augmented by a first priority allotment of five cubic feet per second of imported water from the North Cow Creek watershed. The combined flow is generally adequate to supply all allotments throughout the season.

Clover Creek produces enough water to meet nearly all allotments throughout the season. In dry years, diversions may be reduced to about 70 percent of decreed allotments.

Records of the daily mean discharge of North Cow Creek near Ingot are presented in Table 12. Numerous additional gaging stations were maintained in various diversion ditches.

Method of Distribution

Water in the Cow Creek service area is used for domestic and stockwatering purposes and for irrigation of meadow hay, alfalfa, small orchards, and vegetable gardens. The alfalfa and hay lands are irrigated primarily by wild flooding, although some sprinklers are used. Furrows are used for irrigating gardens, and basins or checks and sprinklers are used for orchards. Much of the water applied is lost by surface runoff or by deep percolation, some of which returns to the creeks and thereby becomes available for rediversion downstream.

Only one priority allotment was provided in each of the Cow Creek service area decrees (see Table 1) except for the Oak Run Creek decree which contains a surplus allotment.

1969 Distribution

Watermaster service began July 1 in the Cow Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply for the Cow Creek service area was far above average. Severe snowstorms during the preceding winter accounted for a near-record snowpack at the higher elevations. Runoff during the spring and early summer months was exceptionally high. Late summer flows also remained higher than normal. Consequently, most users received adequate water supplies throughout the season.

Despite above-average temperatures for extended periods, with accompanying high evaporation and ditch losses, the irrigation season was, in general, very successful.

Cedar Creek. Cedar Creek consistently has the lowest ratio of water supply to water rights in the Cow Creek service area. Even in years of adequate supply on neighboring streams, Cedar Creek water users usually have insufficient water during late July, August and September. However, during 1969 some water right owners did not use their allotments. Consequently, those using water received a reasonable supply throughout the summer.

North Cow Creek. The water supply in North Cow Creek was outstanding until late summer. Most water right owners were able to divert more than their allotments through the early part of the season. Throughout August and September, historically critical months, flows were sufficient to satisfy the full allotments to all users who were diverting water.

Oak Run Creek. The available water supply in Oak Run Creek was sufficient to supply surplus flows to most water users throughout the season.

Water was available for irrigation of riparian lands downstream from the adjudicated area throughout the summer. This is an unusual occurrence.

Clover Creek. The available water supply in Clover Creek was sufficient to supply all demands. Surplus water was available until late August. Because some water right owners did not use their full entitlements, sufficient flow existed to satisfy 100 percent of the remaining allotments throughout the season.

Special Occurrences

A concrete and metal automatic division and weir box was constructed at the Enke lateral on the Welch and Strayer ditch in Oak Run Creek. Several similar structures are planned for construction on this ditch next season. A two-foot concrete Parshall flume will be built in the Rickert ditch on North Cow Creek this fall. A large concrete diversion dam with a metal screw-type headgate will also be constructed this fall on Clear Creek at the Mill ditch diversion

COW CREEK WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

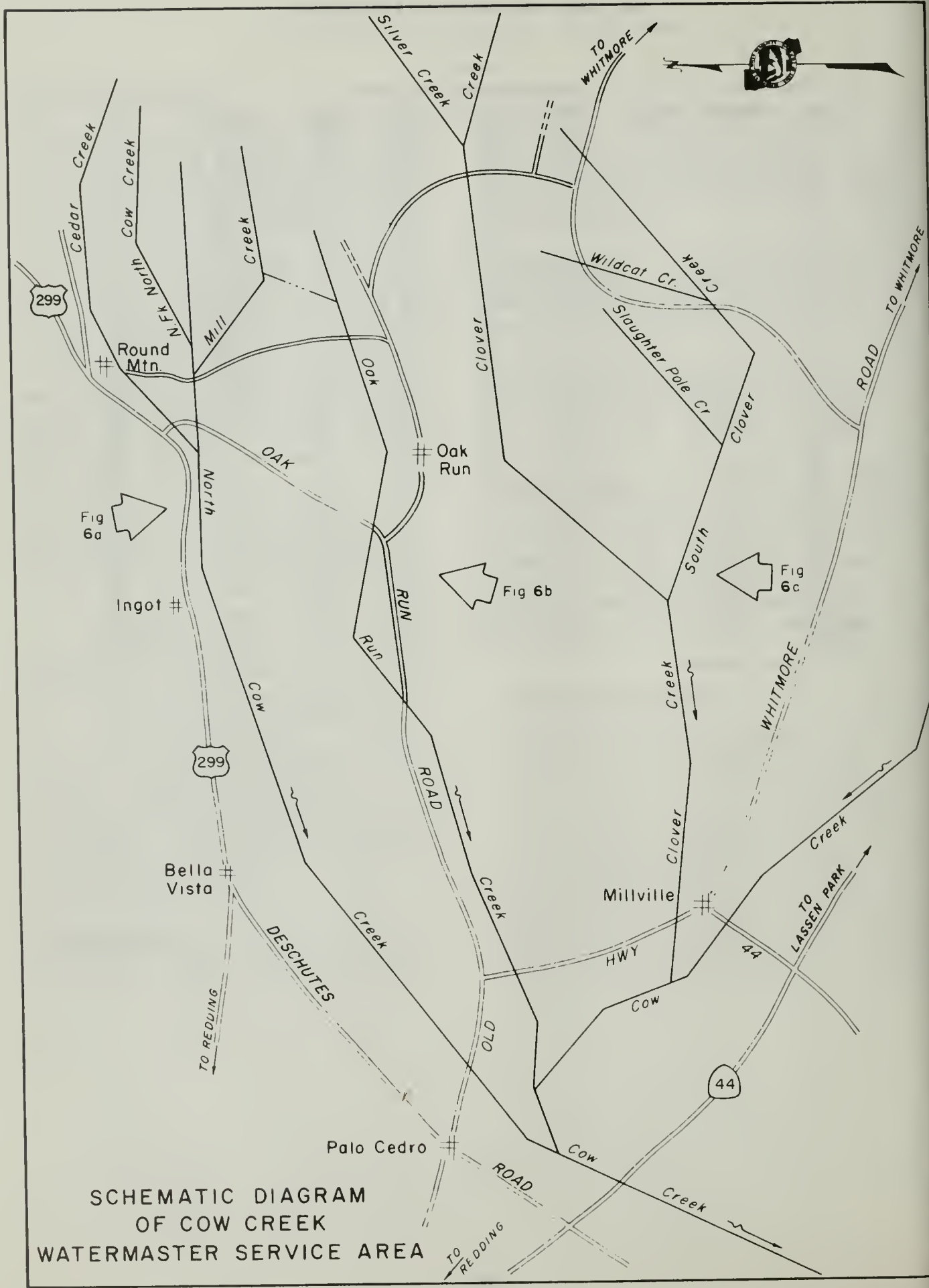
TABLE 12

NORTH COW CREEK NEAR INGOT

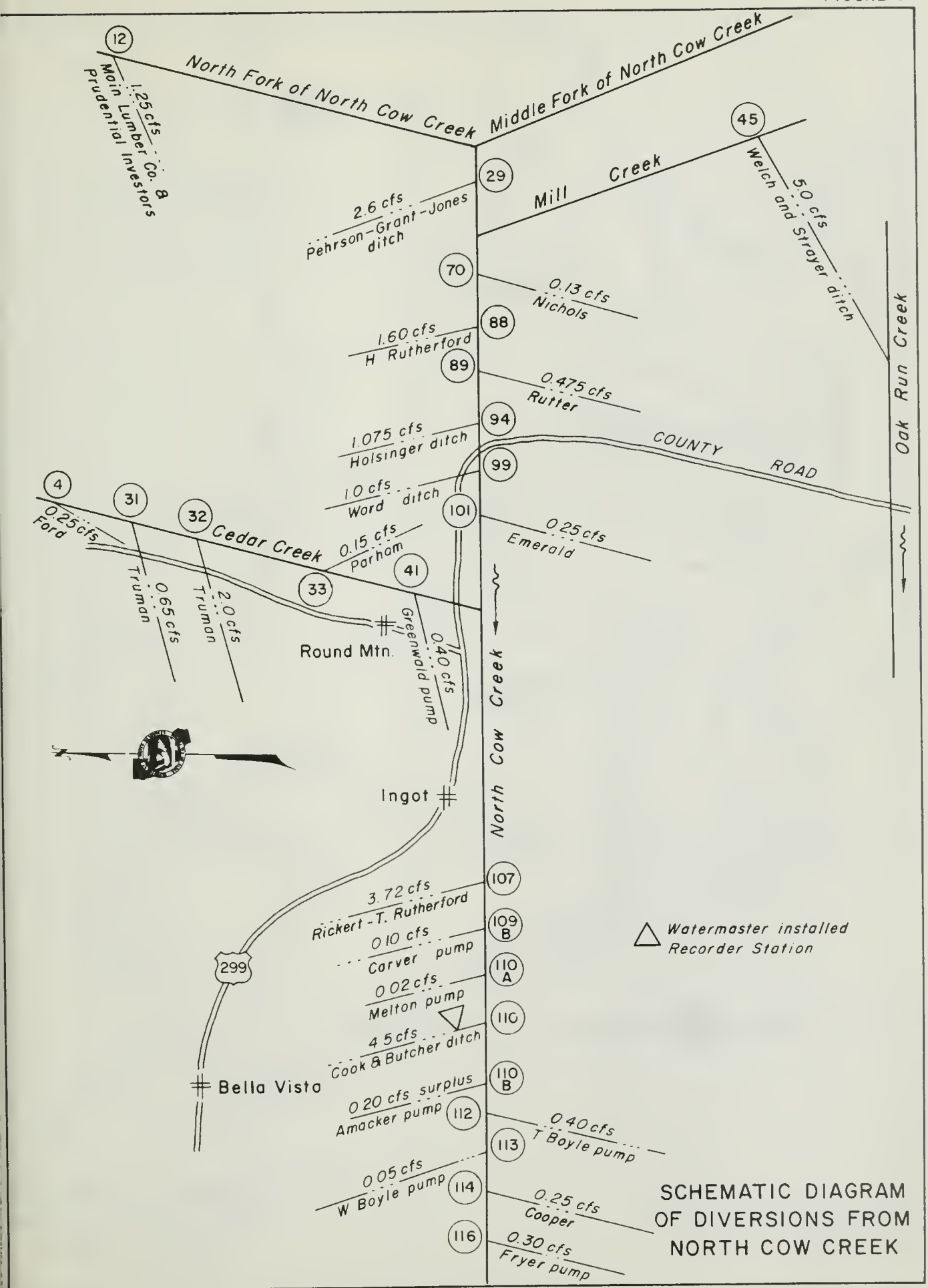
Day	March	April	May	June	July	August	September	Day
1				103*	27	12	10	1
2				96	26	12	10	2
3				92	26	12	10	3
4				87	25	11	10	4
5				82	23	11	10	5
6				78	22	12	10	6
7				72	21	11	10	7
8				72	21	11	10	8
9				75	22	11	10	9
10				73	20	11	10	10
11				75	20	11	10	11
12				65	18	11	10	12
13				61	18	11	10	13
14				57	17	11	10	14
15				52	16	10	10	15
16				49	16	11	10	16
17				46	15	10	10	17
18				44	15	10	10	18
19				43	15	10	14	19
20				42	15	10	14	20
21				41	15	10	13	21
22				39	14	10	12	22
23				36	15	11	12	23
24				35	15	11	12	24
25				34	15	11	12	25
26				34	15	10	12	26
27				32	13	11	11	27
28				31	13	11	11	28
29				30	13	10	11	29
30				28	13	10	11	30
31					13	10		31
Mean				56.8	17.8	10.8	10.8	Mean
Runoff In Acre-Feet				3380	1090	662	645	Runoff In Acre-Feet

* Beginning of Record

FIGURE 6

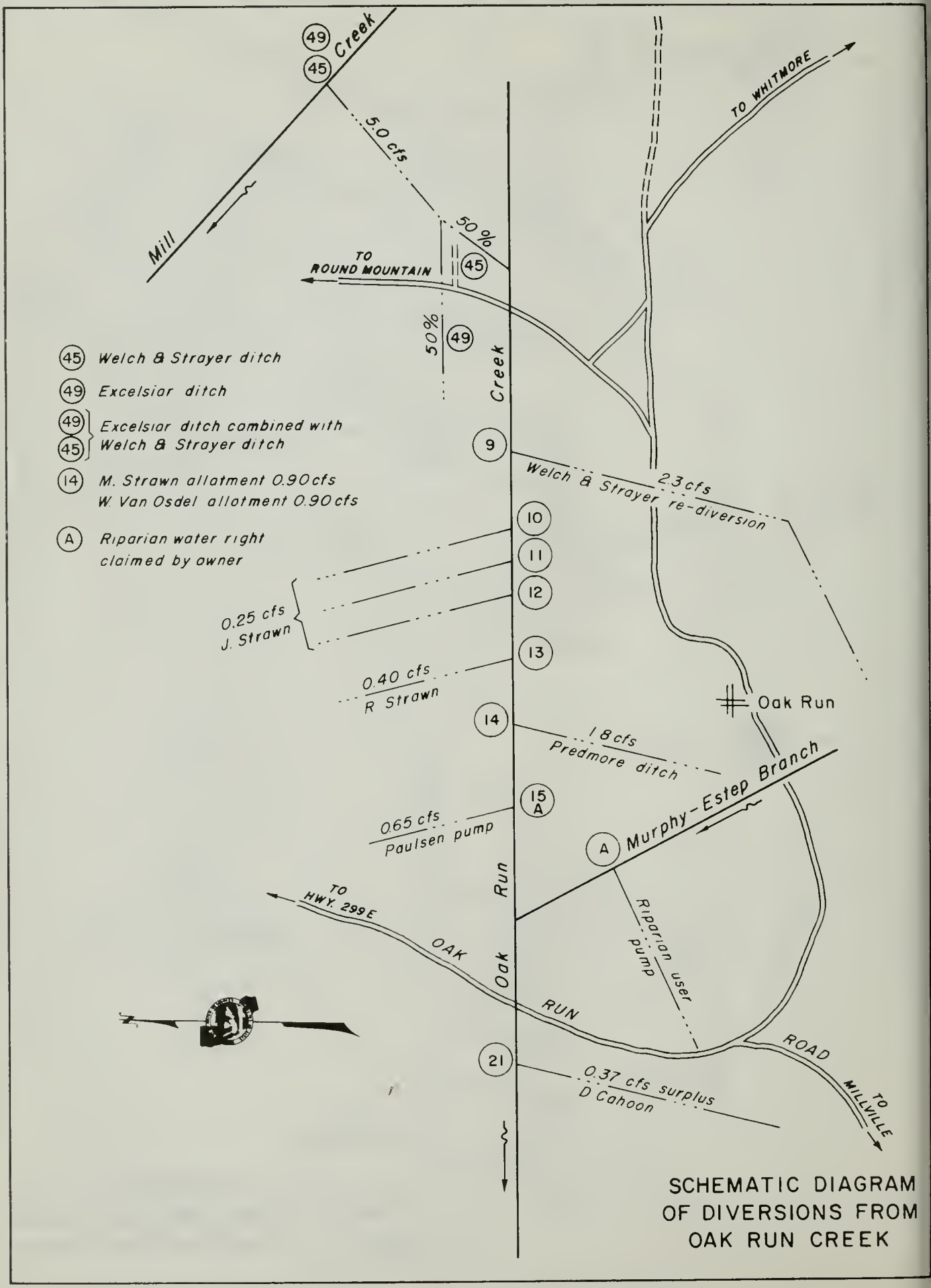


SCHEMATIC DIAGRAM
OF COW CREEK
WATERMASTER SERVICE AREA

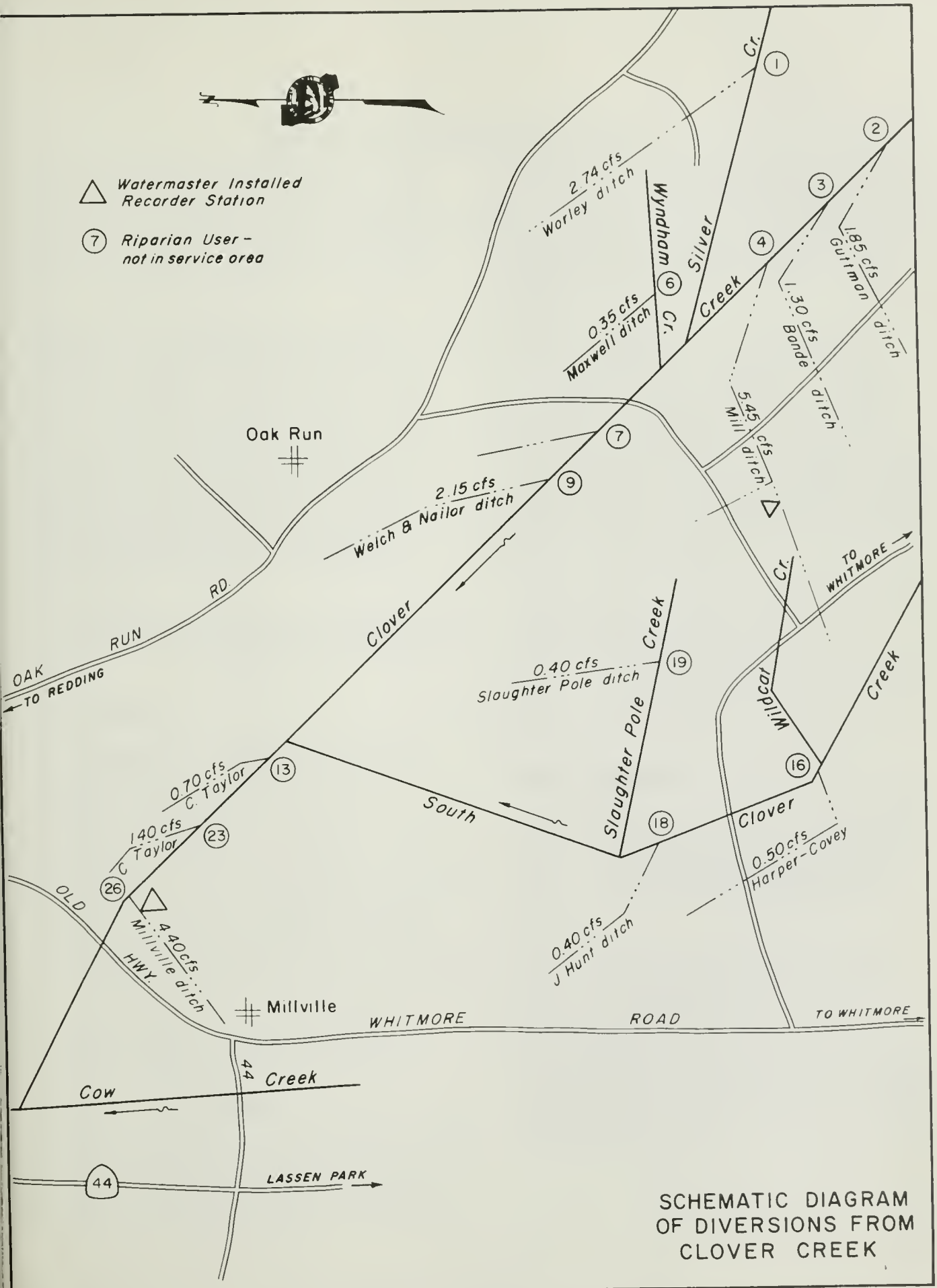


SCHEMATIC DIAGRAM OF DIVERSIONS FROM NORTH COW CREEK

FIGURE 6b



SCHEMATIC DIAGRAM OF DIVERSIONS FROM OAK RUN CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM CLOVER CREEK

Digger Creek Watermaster Service Area

The Digger Creek service area is located in southeastern Shasta County and northeastern Tehama County. There are 35 water right owners in the area with total allotments of 23.225 cubic feet per second.

Digger Creek forms a portion of the boundary line between Shasta and Tehama Counties. It drains an area of approximately 45 square miles on the western slopes of mountains situated immediately west of Lassen National Park. The creek flows in a westerly direction through the town of Manton to its confluence with North Fork Battle Creek. Manton, the only community in the area, is located approximately 40 miles northeast of Red Bluff.

A schematic drawing of the Digger Creek stream system is presented as Figure 7, page 39.

Water Supply

Precipitation, occurring principally in the winter months, is typical of Northern California foothill areas. Snowmelt contributes to the early runoff but the summer streamflow is primarily from springs. In average runoff years there is sufficient flow in Digger Creek, with careful regulation, to satisfy all decreed allotments throughout the entire irrigation season. However, serious deficiencies occur in dry years.

The estimated daily mean discharge of Digger Creek below South Fork Branch is presented in Table 13, page 38.

Method of Distribution

There are four court decrees (see Table 1) on Digger Creek. These decrees, in effect, have divided the water rights on the creek into two groups, the upper users and the lower users. The three upper users irrigate lands adjoining the stream so that all water not consumptively used returns to Digger Creek. The lower users are located within a five-square-mile area. Very little runoff from the lower users returns to the creek.

The three upper users' water rights are absolute and not correlative to the lower users; therefore, allotments are not cut proportionally as Digger Creek flows decrease. Since the lower users have to stand all deficiencies, their allotments are cut proportionally as the flow decreases. In effect, the upper users have first priority allotments and the lower users have second priority allotments.

Irrigation is accomplished principally by wild flooding, although border checks and sprinklers are used on a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the fields.

1969 Distribution

Watermaster service began in the Digger Creek service area on July 1 and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in Digger Creek was outstanding. During the usually critical months of August and September, all water users received 100 percent or more of their allotments. In addition, surplus quantities ranging from 10 to 20 percent of the total adjudicated water rights flowed unused from the service area.

Special Occurrences

The following structures will be constructed before the start of the 1970 irrigation season: A one-foot concrete Parshall flume in the Love's Mill Branch; a concrete turnout and weir structure with metal screw-type headgate in the Crooker-Harrison ditch at the Harrison lateral; a concrete automatic division box at the lower end of the Crooker lateral; and a Hersey flow meter at the lower end of the Crooker lateral to regulate and measure several small domestic water rights.

DIGGER CREEK WATERMASTER SERVICE AREA

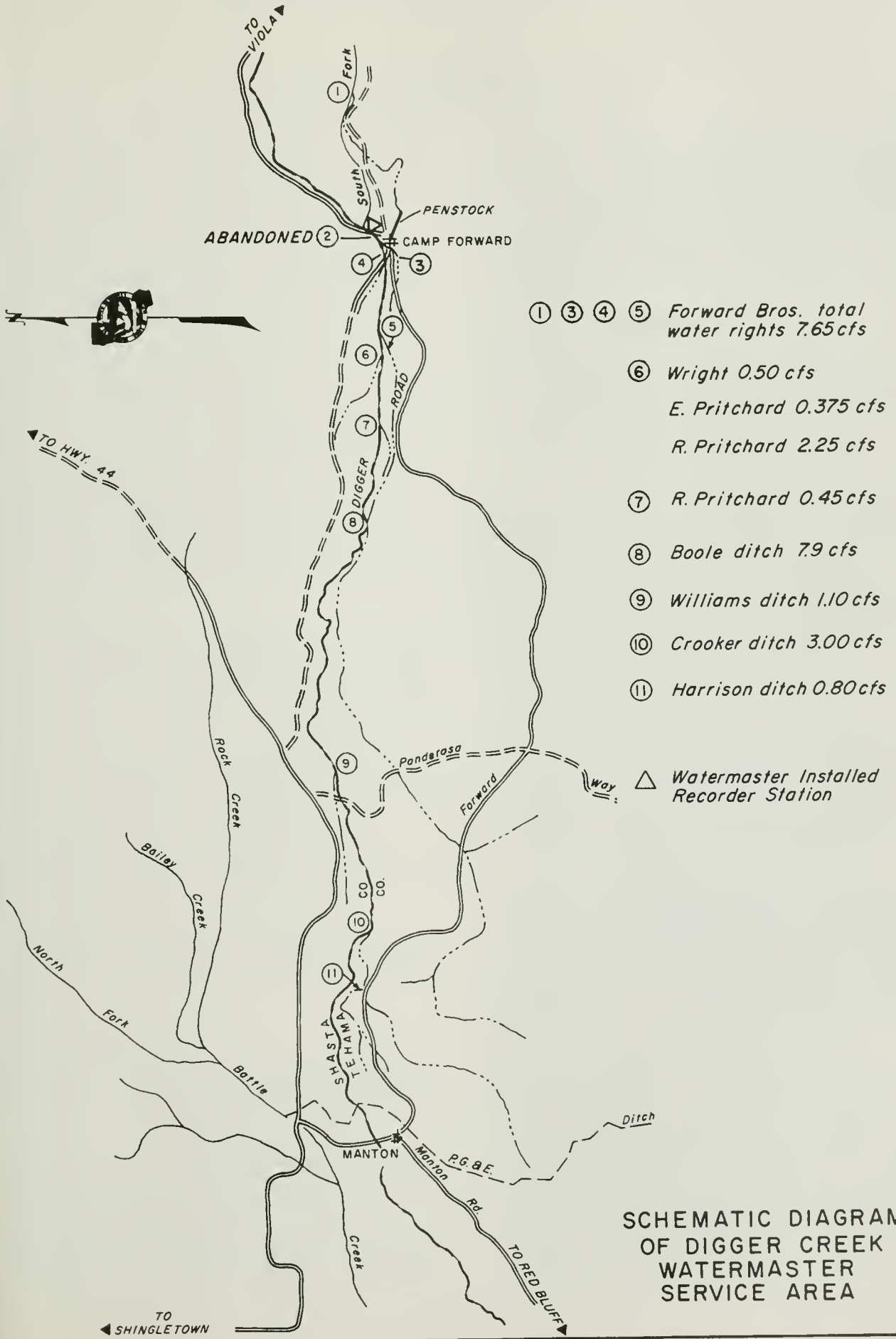
1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 13

DIGGER CREEK BELOW SOUTH FORK BRANCH

Day	March	April	May	June	July	August	September	Day
1					42*	33	28	1
2					41	33	28	2
3					41	33	28	3
4					40	32	27	4
5					40	32	27	5
6					40	32	27	6
7					39	32	27	7
8					39	32	27	8
9					39	32	26	9
10					38	31	26	10
11					38	3	26	11
12					38	31	26	12
13					37	31	26	13
14					37	31	25	14
15					37	30	25	15
16					37	30	25	16
17					36	30	25	17
18					36	30	25	18
19					36	30	25	19
20					36	30	25	20
21					35	29	25	21
22					35	29	25	22
23					35	29	25	23
24					35	29	25	24
25					35	29	25	25
26					34	29	25	26
27					34	29	25	27
28					34	28	25	28
29					34	28	25	29
30					33	28	25	30
31					33	28		31
Mean					36.9	30.4	25.8	Mean
Runoff In Acre-Feet					2270	1870	1540	Runoff In Acre-Feet

* Beginning of Record



SCHEMATIC DIAGRAM OF DIGGER CREEK WATERMASTER SERVICE AREA

French Creek Watermaster Service Area

The French Creek service area is located in western Siskiyou County near the town of Etna in Scott Valley. There are 26 water right owners in the service area with total allotments of 30.59 cubic feet per second. The major sources of water supply are French Creek, Miners Creek, and North Fork French Creek. French Creek flows in a northeasterly direction through the central part of the service area. Miners Creek begins east of the headwaters of French Creek and flows in a northerly direction, joining French Creek about 3 miles above its confluence with Scott River. North Fork French Creek begins north of the headwaters of French Creek and flows easterly, joining French Creek one mile upstream from the confluence with Miners Creek.

The service area encompasses the entire agricultural area within the French Creek Basin, and some additional lands along the west side of the Scott River near the town of Etna. The service area is about one-half mile wide and five miles long, with the main axis and drainage running from south to north. Elevations of the agricultural area range from about 3,200 feet at the south to about 2,800 feet at the confluence of French Creek and Scott River.

A schematic drawing of the French Creek stream system is presented as Figure 8, page 43.

Water Supply

The water supply is derived from snowmelt runoff, springs and seepage, and occasional summer thundershowers.

The watershed of French Creek contains about 32 square miles of heavily forested, steep, mountainous terrain of the easterly slopes of the Salmon Mountains. It varies in elevation from about 7,200 feet along its west rim to about 3,200 feet at the foot of the slopes bordering French Creek Valley. Snowmelt runoff is normally sufficient to supply all demands until about the middle of July. The daily mean discharge of Duck Lake Creek is presented in Table 14, page 42.

Method of Distribution

Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is conveyed by ditches and laterals to the place of use.

The French Creek decree (see Table 1) provides three separate areas of distribution within the service area and establishes the following number of priority classes for these areas: French Creek, including Horse Range Creek, Paynes Lake Creek, and Duck Lake Creek - seven; Miners Creek - three; North Fork French Creek - three.

1969 Distribution

Watermaster service began in the French Creek service area on July 1 and continued until September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

Because watermaster service was initiated during the 1969 season, there is little data available for a water supply comparison with past years. However, it is the opinion of most ranchers in the area that above-average water year conditions existed.

To provide efficient watermaster service on French Creek, installation of permanent-type control structures and measuring devices is planned for each diversion ditch now in use. During the year, 5 metal screw-type headgates, 3 concrete Parshall flumes, and 6 concrete weir boxes were constructed. Additional structures will be built during the 1970 season.

FRENCH CREEK WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

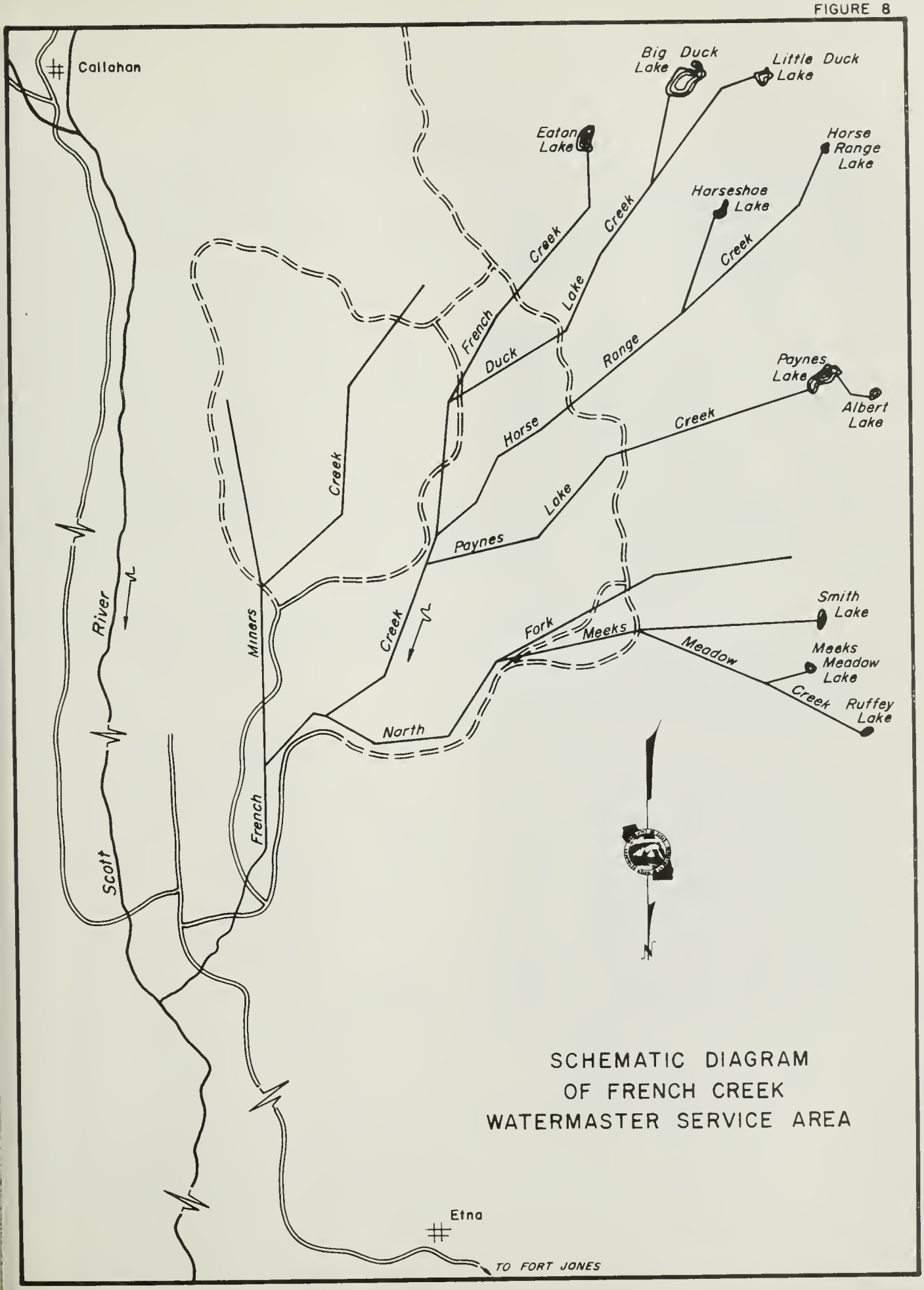
TABLE 14

DUCK LAKE CREEK TRIBUTARY TO FRENCH CREEK

Day	March	April	May	June	July	August	September	Day
1					8.2*	2.8	1.1	1
2					8.2	2.7	1.1	2
3					7.8	2.5	1.1	3
4					7.4	2.3	1.1	4
5					7.1	2.2	1.1	5
6					6.8	2.0	1.1	6
7					6.1	2.0	1.1	7
8					5.8	2.0	1.1	8
9					5.6	2.0	1.1	9
10					5.4	1.9	1.1	10
11					5.0	1.8	1.1	11
12					4.8	1.8	1.1	12
13					4.6	1.7	1.1	13
14					4.4	1.7	1.1	14
15					4.4	1.7	1.1	15
16					4.2	1.7	1.1	16
17					4.1	1.6	1.1	17
18					3.9	1.6	1.1	18
19					3.8	1.5	1.1	19
20					3.7	1.5	1.1	20
21					3.6	1.5	1.1	21
22					3.6	1.5	1.1	22
23					3.5	1.5	1.1	23
24					3.7	1.3	1.1	24
25					3.6	1.3	1.1	25
26					3.6	1.3	1.1	26
27					3.4	1.2	1.1	27
28					3.3	1.2	1.0	28
29					3.2	1.2	1.0	29
30					3.0	1.1	1.0	30
31					2.9	1.1		31
Mean					4.6	1.7	1.1	Mean
Runoff In Acre-Feet					295	106	65	Runoff In Acre-Feet

* Beginning of Record

FIGURE 8



SCHEMATIC DIAGRAM
OF FRENCH CREEK
WATERMASTER SERVICE AREA

Hat Creek Watermaster Service Area

The Hat Creek service area is located in the eastern part of Shasta County north of Lassen Volcanic National Park. There are 47 water right owners in the area with total allotments of 135.545 cubic feet per second. Hat Creek, which flows in a northerly direction through the area, is the only source of water supply in the service area. The place of use is Hat Creek Valley, which is approximately 20 miles long and two miles wide. The valley extends northward from a point about three miles south of the town of Old Station, to the confluence of Rising River and Hat Creek. The irrigable lands, which consist primarily of volcanic ash, are interlaced with large outcroppings of volcanic rock.

Schematic drawings for both the upper and lower users' diversion systems from Hat Creek are presented as Figures 9 through 9b, pages 47 through 49.

Water Supply

The water supply of Hat Creek is derived from snowmelt runoff on Mount Lassen and from large springs. Snowmelt normally creates a high flow during May and June; however, the substantial portion of supply during the summer months comes from large springs which decrease only slightly in output. Only after a series of dry years does the flow of these springs fall much below 75 percent of total allotments.

A record of the daily mean discharge of Hat Creek near the town of Hat Creek is presented in Table 15, page 46.

Method of Distribution

The Hat Creek decree (see Table 1) divides the water rights on Hat Creek into two groups (upper users and lower users) who use the water on 10-day rotation schedules, with one priority class for each group as the basis for distribution. Therefore, a complete reregulation of all diversions occurs every 10 days, alternating an irrigation supply to one group and a minimum flow (stockwater) to the other group.

Most irrigation in the area is accomplished by wild flooding. Large heads of water are used to cover the land rapidly, thereby preventing excessive loss from percolation in the extremely porous soil. Diversion dams constructed across the creek serve to divert water into large ditches. The fields, many of which have checks and borders, are then flooded from the main diversion ditch or from laterals. A few domestic rights are met by pumping directly from Hat Creek.

1969 Distribution

Watermaster service began May 1 in the Hat Creek service area and continued until September 30. Virgil Buechler, Water Resources Technician II, was watermaster during this period.

The available water supply in Hat Creek was extremely good. Therefore, the usual 10-day rotation schedule was not initiated until August 19. During this rotation, the lower users received 100 percent of their allotments (one priority). During the following rotation period for the upper users, the flow decreased to about 80 percent of their allotments (one priority). It remained constant at this level, about 130 to 140 cubic feet per second, throughout the season.

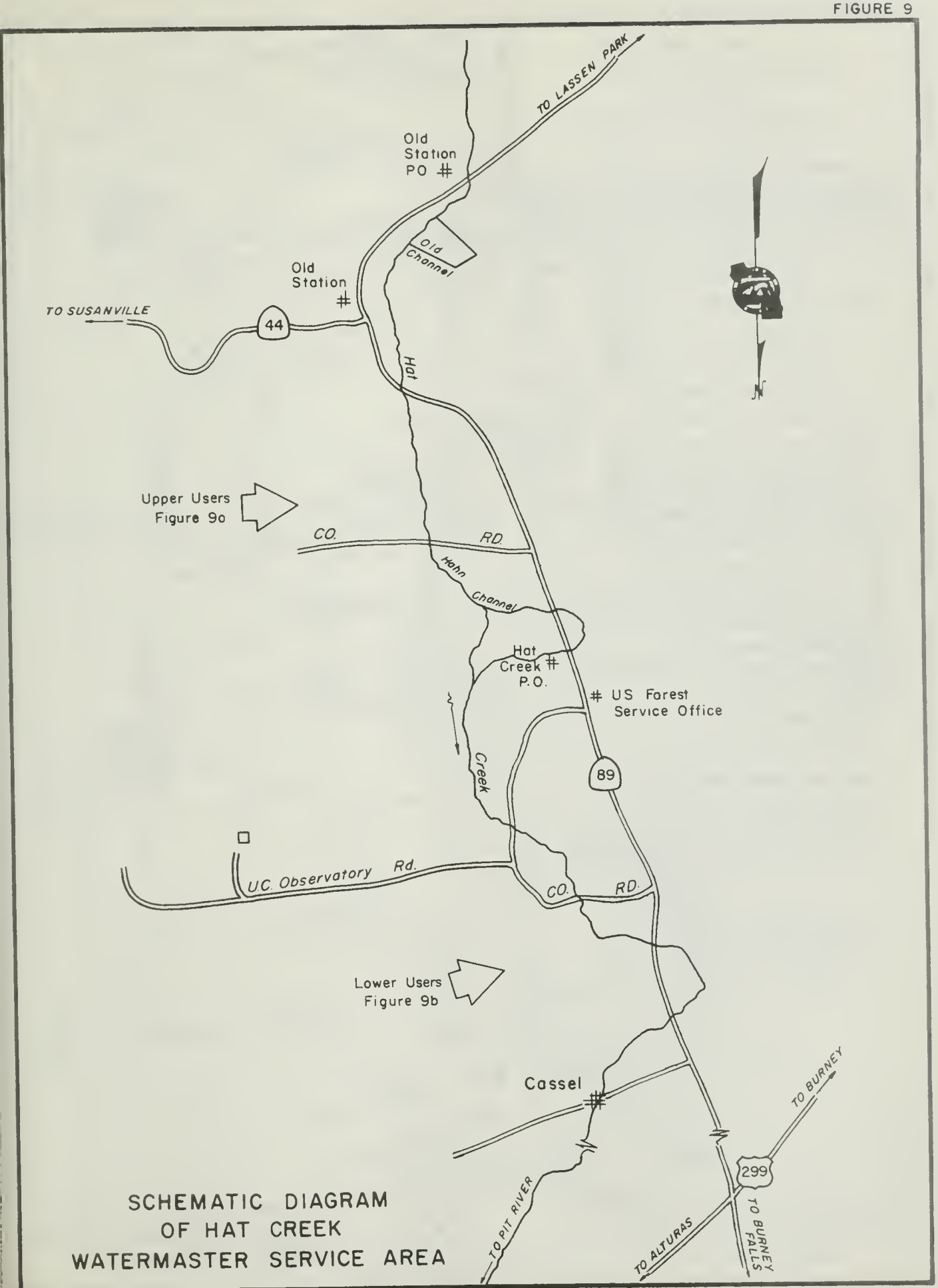
HAT CREEK WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 15

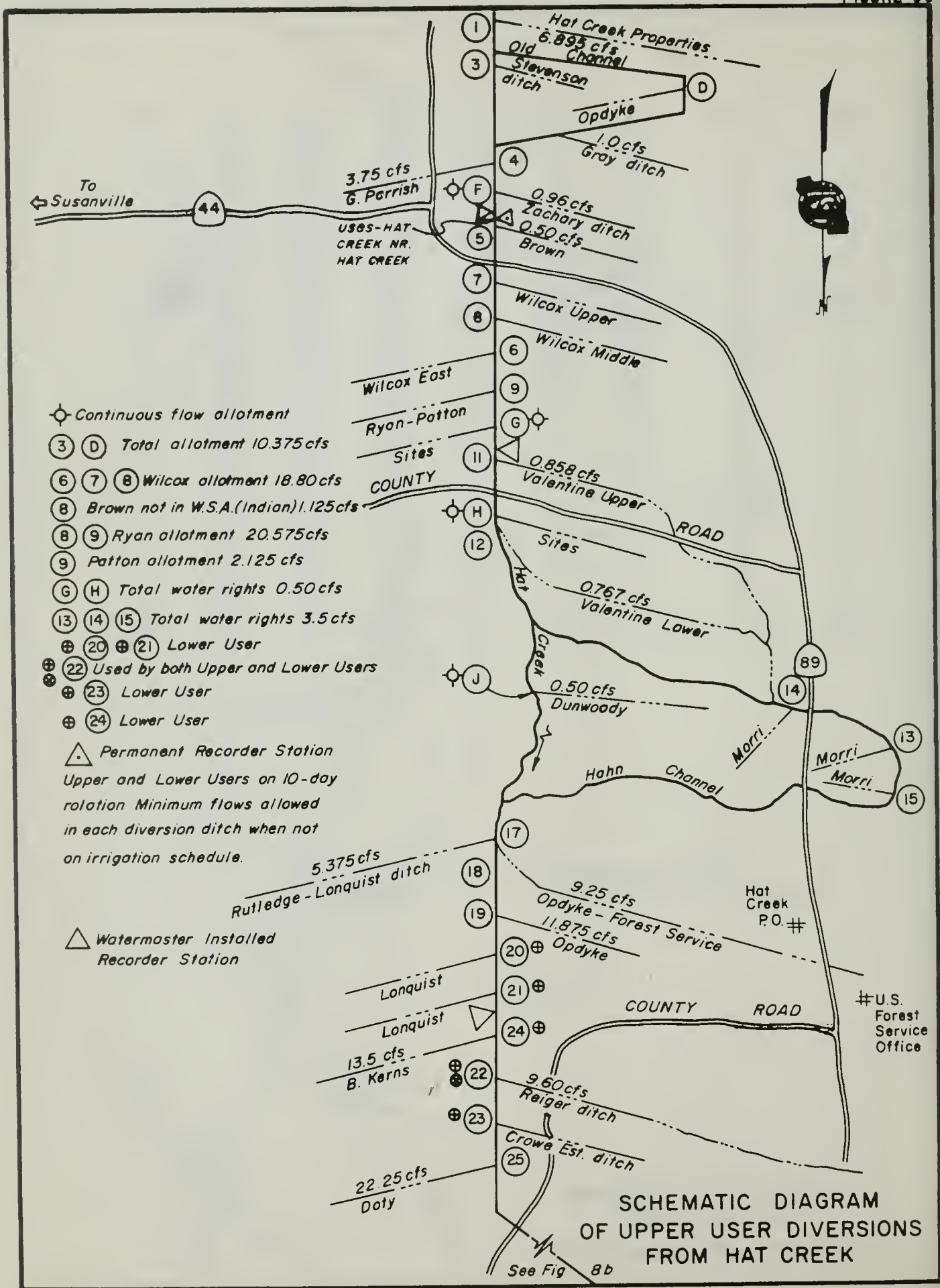
HAT CREEK NEAR HAT CREEK

Day	March	April	May	June	July	August	September	Day
1	136	154	170	308	195	146	142	1
2	136	153	168	306	195	145	141	2
3	135	150	170	311	192	145	141	3
4	135	149	162	322	189	145	140	4
5	135	154	162	326	191	145	141	5
6	134	149	175	315	189	144	141	6
7	134	148	189	296	185	144	141	7
8	133	147	205	298	181	144	146	8
9	135	148	224	288	180	142	149	9
10	133	147	240	276	177	144	149	10
11	134	149	256	286	176	144	148	11
12	134	153	261	278	175	140	149	12
13	132	152	245	280	173	141	150	13
14	132	152	251	280	173	141	150	14
15	133	149	235	274	171	142	150	15
16	133	149	245	267	168	142	150	16
17	134	154	267	256	170	142	150	17
18	133	160	290	261	170	141	147	18
19	132	159	290	269	167	147	144	19
20	133	162	273	263	164	148	142	20
21	132	168	274	254	165	148	142	21
22	133	176	280	249	165	147	145	22
23	133	184	294	245	162	146	147	23
24	133	171	313	237	158	146	146	24
25	134	165	335	222	155	147	145	25
26	135	161	335	211	153	146	144	26
27	137	160	313	204	152	145	145	27
28	139	162	290	196	150	145	144	28
29	141	171	292	193	149	142	144	29
30	145	172	313	195	149	141	142	30
31	153		315		148	142		31
Mean	135	158	253	266	171	144	145	Mean
Runoff In Acre-Feet	8310	9380	15530	15800	10490	8860	8640	Runoff In Acre-Feet

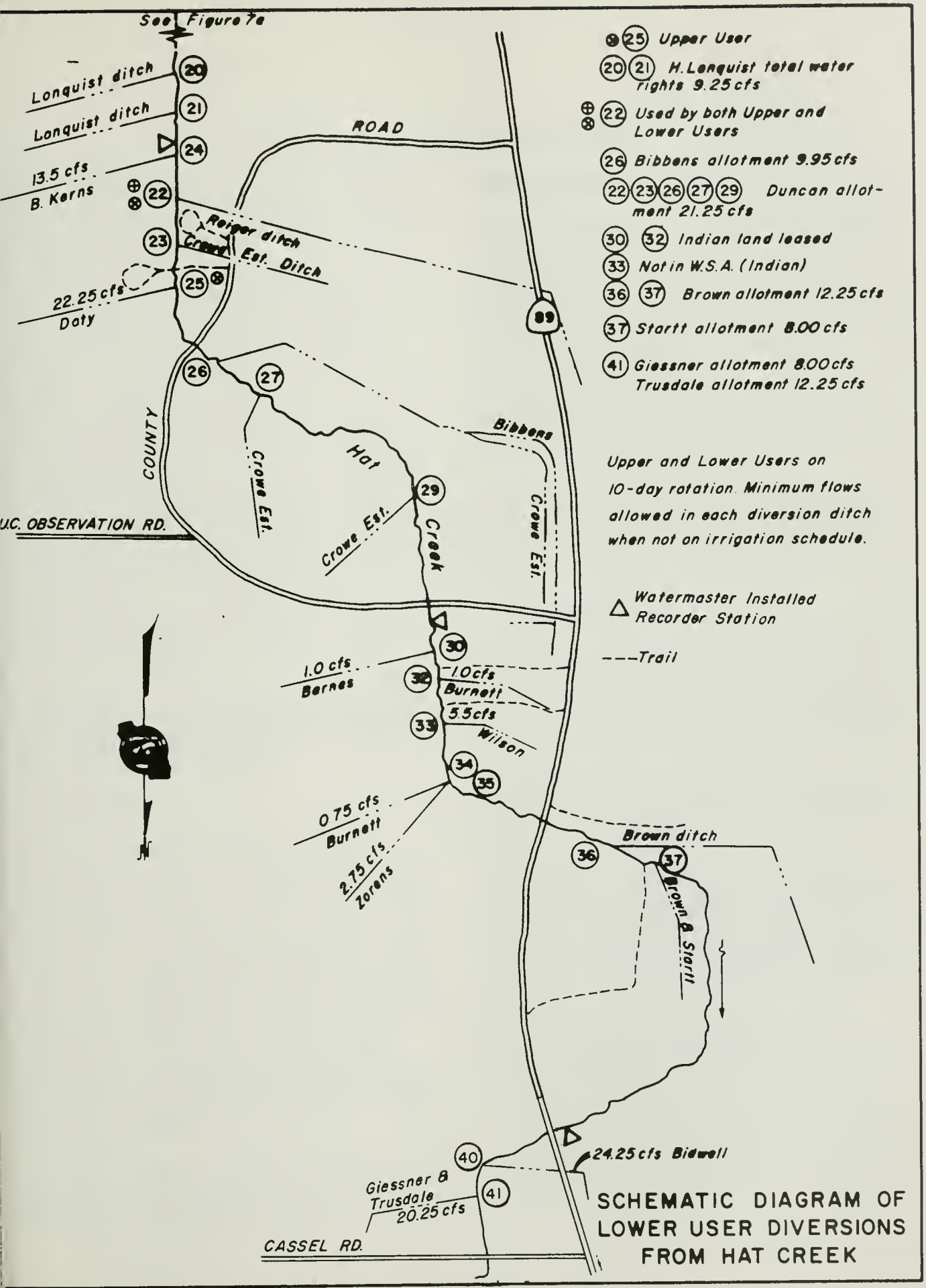


SCHEMATIC DIAGRAM
OF HAT CREEK
WATERMASTER SERVICE AREA

FIGURE 9a



SCHEMATIC DIAGRAM OF UPPER USER DIVERSIONS FROM HAT CREEK



SCHEMATIC DIAGRAM OF LOWER USER DIVERSIONS FROM HAT CREEK

Indian Creek Watermaster Service Area

The Indian Creek service area is located in the north central part of Plumas County in the vicinity of the town of Greenville. There are 43 water right owners in the service area with total allotments of 97.015 cubic feet per second. The major sources of supply in the service area are Indian Creek and two major tributaries, Wolf Creek and Lights Creek. Indian Creek and its minor tributaries rise in the mountains east of the service area. It then flows through Gennessee Valley and through Indian Valley past the towns of Taylorsville and Crescent Mills to its confluence with the North Fork Feather River. Indian Creek is joined from the north by Lights Creek and Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, which is about four miles long and two and one-half miles wide. . The average elevation is about 3,500 feet.

A schematic drawing of each major stream system within the Indian Creek service area is presented as Figures 10 through 10c, pages 53 through 56.

Water Supply

The water supply in the Indian Creek service area is derived primarily from snowmelt runoff with springs and seepage maintaining some late summer flow. The flow of Wolf Creek is normally sufficient to supply all allotments until June 1, while Indian and Lights Creeks, with the exception of some tributaries, have sufficient flow to supply all allotments until July 1. After these dates, the flow steadily decreases throughout the season until by the end of August only a small portion of allotments is available.

A record of the daily mean discharge of Indian Creek near Taylorsville is presented in Table 16, page 52.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding. Small diversion dams are placed in the stream channels to divert the water into distribution ditches for conveyance to the fields. Small check dams, located throughout the fields in swales, help to spread the water over the ground. There is a limited amount of check and border irrigation in the valley. A few sprinkling systems are also in use.

The Indian Creek decree (see Table 1) establishes three priority classes for each of the major stream systems within the Indian Creek service area.

1969 Distribution

Watermaster service began in the Indian Creek service area on April 11 and continued until September 30. Harvey M. Jorgensen, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in the service area was slightly above average during the season.

Wolf Creek. The available water supply of Wolf Creek was sufficient to satisfy all allotments (three priorities) until July 31. The streamflow gradually decreased until only first priority allotments were being served on August 15.

Lights Creek and Tributaries. The available water supply of Lights Creek was sufficient to satisfy all allotments (three priorities) until July 15. The flow then steadily decreased until the stream was dry on August 15. The available water supply of Cooks Creek satisfied all allotments until July 25.

Indian Creek. The available water supply of Indian Creek was sufficient to satisfy all allotments (three priorities) until July 31. Sufficient underflow occurred below the Mill Race Diversion Dam to meet the allotments of the downstream users.

Special Occurrences

During the season it was necessary to install an orifice plate control device in diversion 54 to facilitate the routing of project water from Antelope Lake past the diversion point.

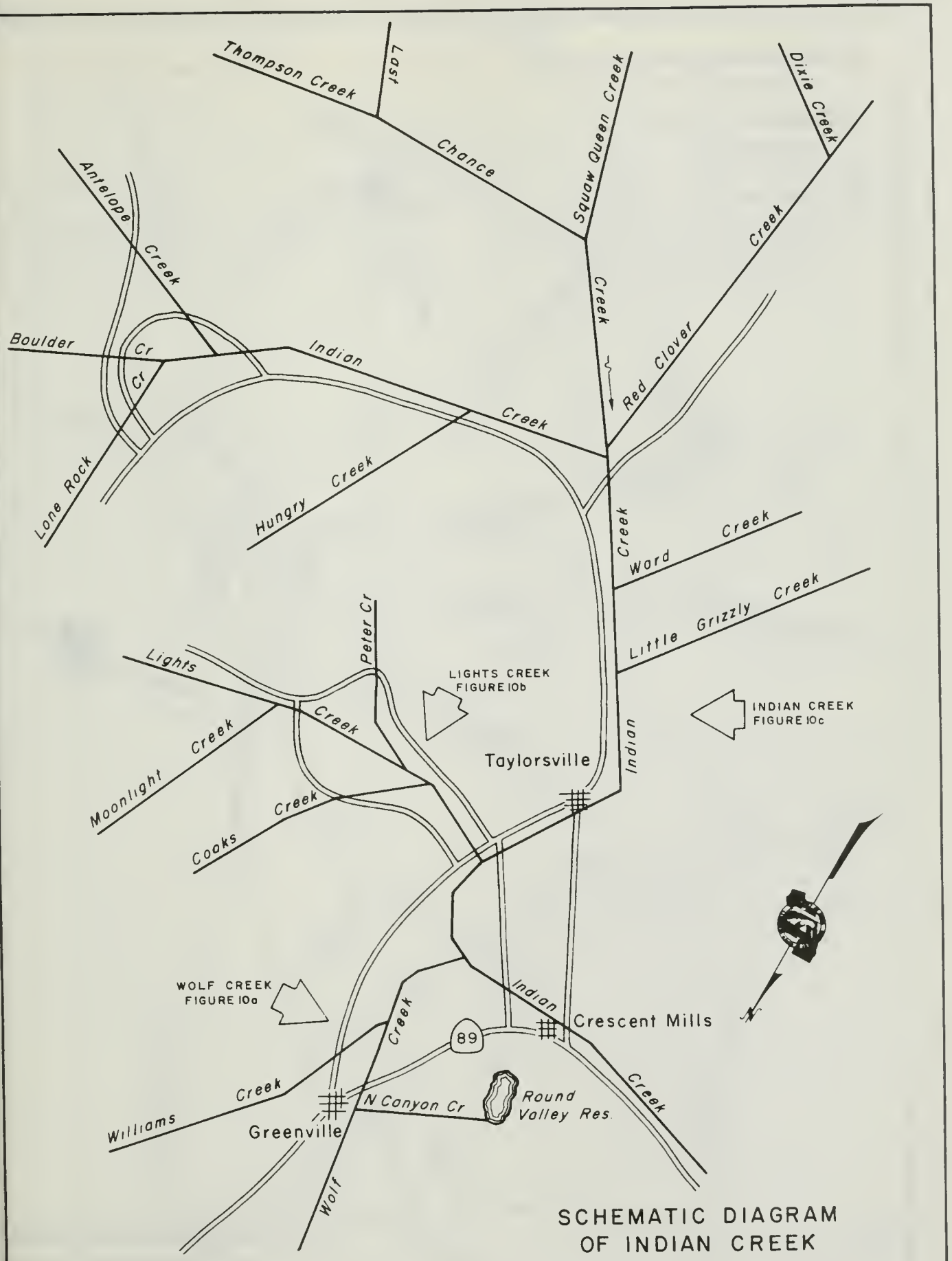
INDIAN CREEK WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

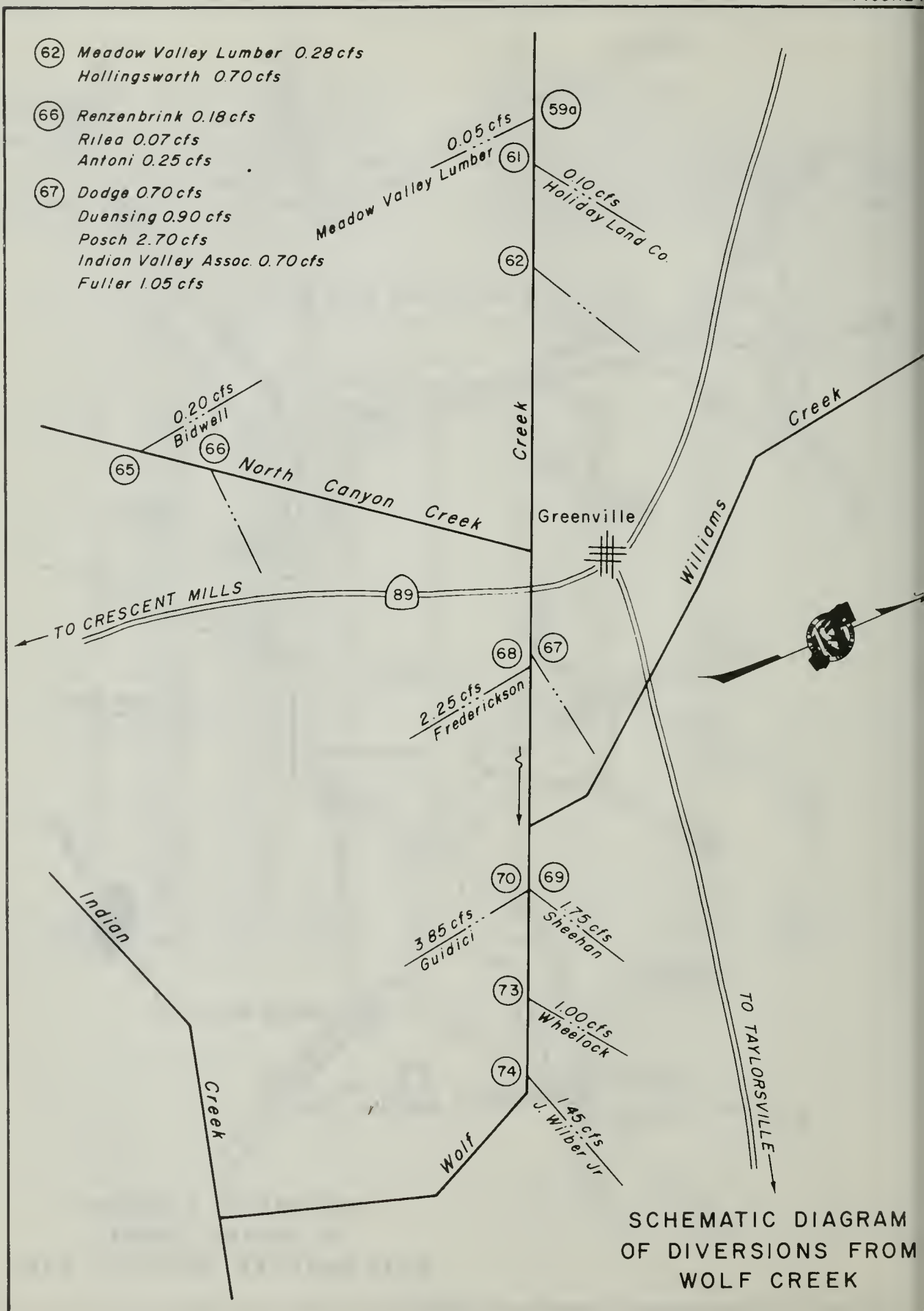
TABLE 16

INDIAN CREEK NEAR TAYLORSVILLE

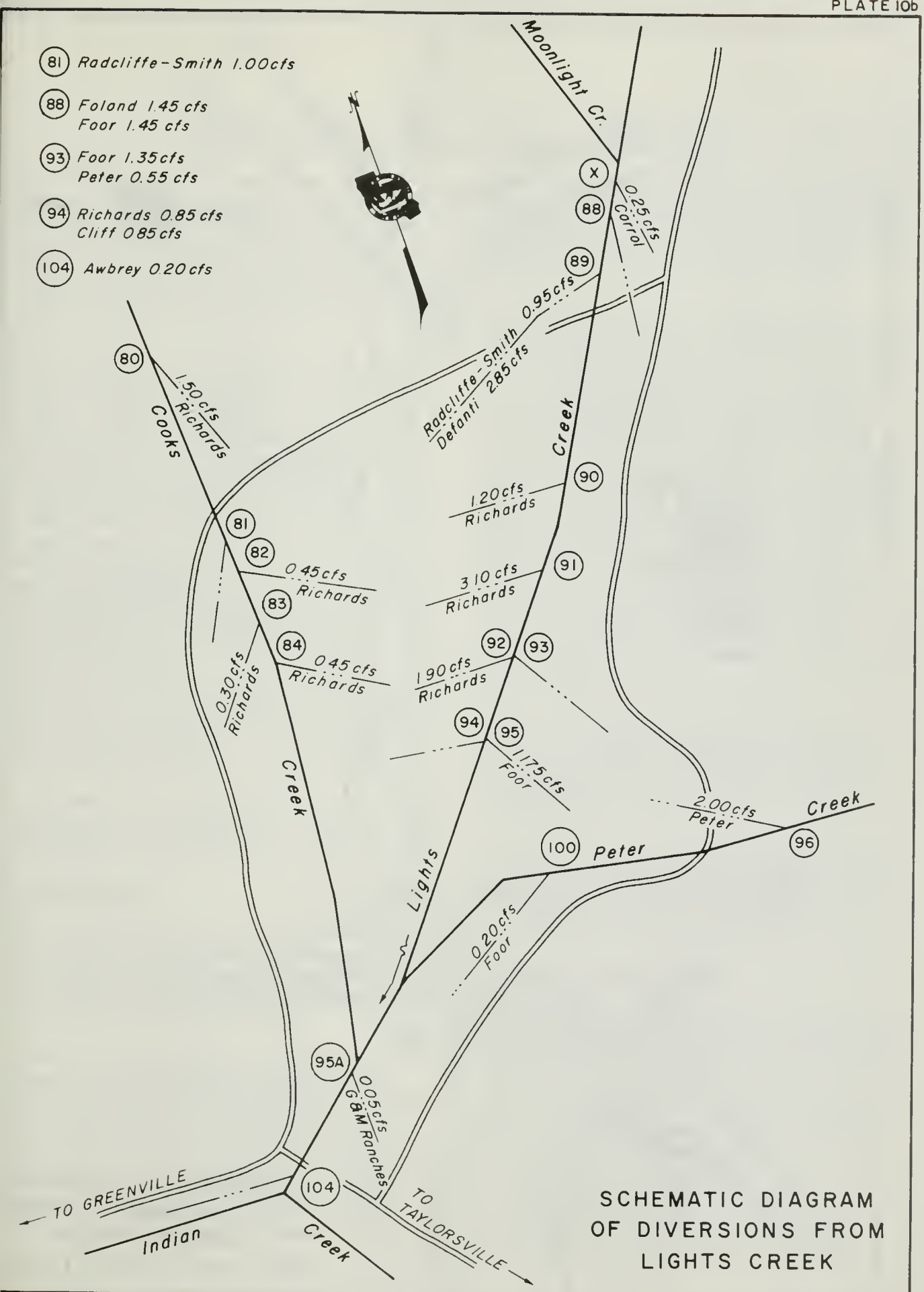
Day	March	April	May	June	July	August	September	Day
1	305	4420	2020	756	191	68	48	1
2	285	3630	1910	711	165	67	53	2
3	296	2740	1840	670	165	66	54	3
4	288	2770	1810	650	151	67	55	4
5	278	3170	1720	646	147	66	54	5
6	295	2520	1790	603	149	64	54	6
7	290	2120	1980	540	146	61	55	7
8	292	2140	2150	546	143	57	55	8
9	298	2250	2370	637	140	55	54	9
10	285	2370	2470	576	144	53	53	10
11	283	2600	2600	565	141	52	50	11
12	289	2950	2670	622	132	53	49	12
13	271	3140	2540	549	127	52	48	13
14	268	2810	2250	537	123	52	48	14
15	277	2260	1960	528	116	51	48	15
16	308	2000	1810	503	111	49	49	16
17	361	2040	1780	447	107	48	50	17
18	438	2430	1750	516	102	48	50	18
19	475	2280	1650	570	98	47	49	19
20	528	2400	1510	481	96	47	48	20
21	529	2620	1410	392	94	47	50	21
22	528	2930	1370	361	91	46	50	22
23	616	3120	1350	327	86	45	48	23
24	697	2710	1310	309	79	45	47	24
25	761	2390	1230	294	77	46	47	25
26	911	2170	1160	253	74	47	48	26
27	1190	1910	1050	252	67	47	47	27
28	1600	1830	939	217	67	46	47	28
29	2140	2010	877	212	64	46	46	29
30	3020	2120	835	210	64	47	46	30
31	4200		816		65	47		31
Mean	729	2662	1707	483	114	52.7	50.0	Mean
Runoff In Acre-Feet	44830	152400	105000	28720	6990	3240	2980	Runoff In Acre-Feet



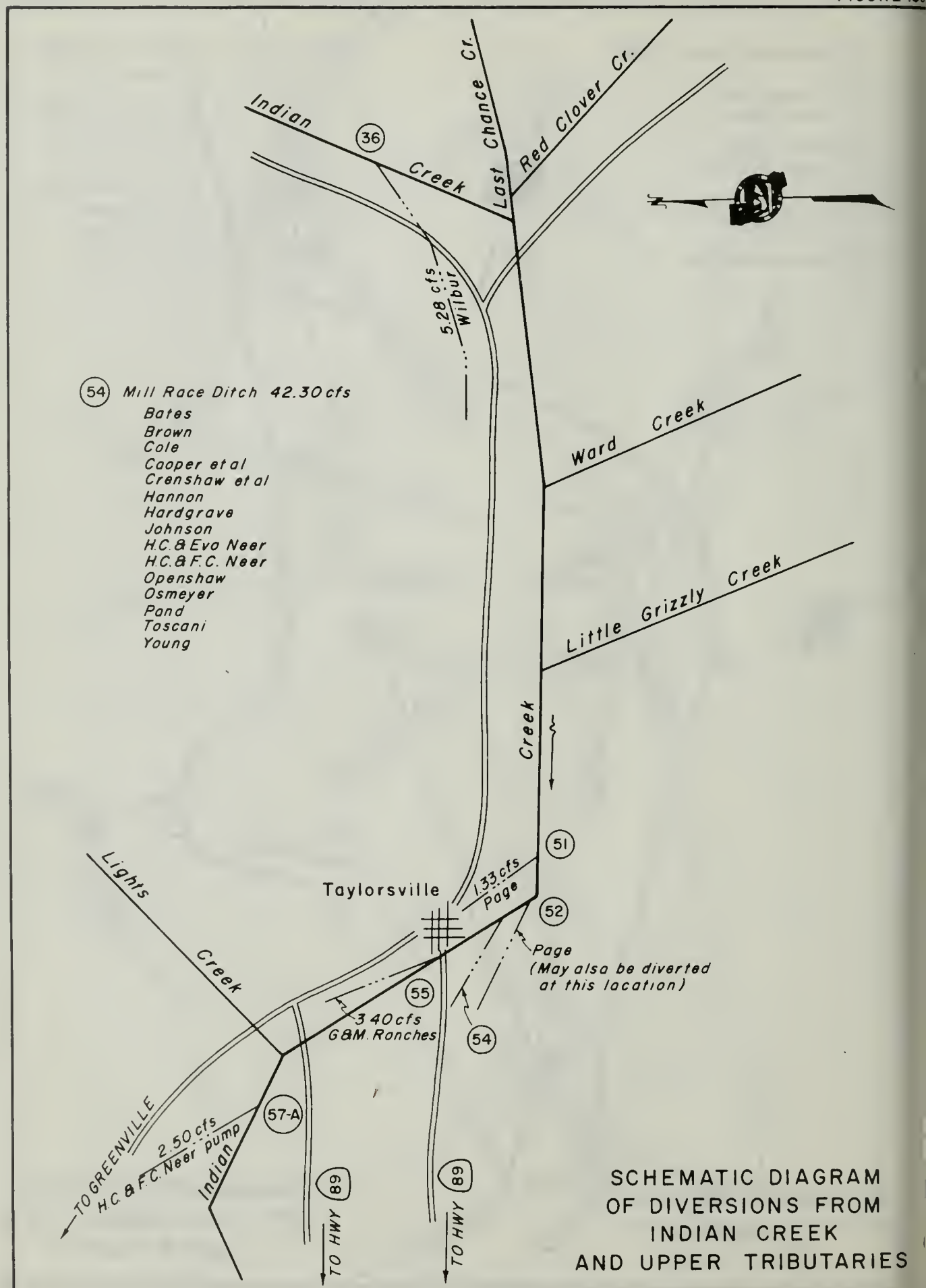
SCHEMATIC DIAGRAM
OF INDIAN CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM OF DIVERSIONS FROM WOLF CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LIGHTS CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM INDIAN CREEK AND UPPER TRIBUTARIES

Middle Fork Feather River Watermaster Service Area

The Middle Fork Feather River service area is located in the plateau area on the west slope of the Sierra Nevada in the eastern portions of Sierra and Plumas Counties. There are 94 water right owners with total allotments of 370.865 cubic feet per second.

Major sources of supply for this service area are the Middle Fork Feather River and its tributaries in the Sierra Valley. The area is comprised of five major stream groups. These groups, starting in the north and east corner of the valley and proceeding in a southerly and westerly direction, are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek. The Middle Fork Feather River channel flows in a general northerly direction for approximately 20 miles through Sierra Valley. It then flows in a westerly direction. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

A schematic drawing of the Middle Fork Feather River service area is presented as Figure 11, page 60.

Water Supply

The major water supply in the Middle Fork Feather River service area is derived from snowmelt runoff, with minor flow from springs and from supplemental stored and foreign water.

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam which was constructed by the Department of Water Resources in 1961. Stored water is released and used as needed under the provisions of an annual contract. Smithneck Creek flow is normally sufficient to supply all allotments until about the middle of May. It then decreases until about June 1. Only first and second priority allotments are then available for the remainder of the season.

The natural flow of Webber Creek is normally sufficient to supply all allotments until the middle of May. At that time up to 60 cubic feet per second is diverted from Little Truckee River to supplement the flow. This imported water is diverted through the Little Truckee Ditch into Cold Stream and then into Webber Creek for use of shareholders in the Sierra Valley Water Company. This supplemental supply decreases rapidly during July, producing only a small quantity during the latter part of the season. The West Side Canal streams normally supply all allotments until the first part of June. The flow then gradually declines throughout the season.

The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1. The flow then gradually declines for the remainder of the season.

Records of the daily mean discharge of several stream gaging stations in the Middle Fork Feather River service area are presented in Tables 17 and 18, page 59.

Method of Distribution

Wild flooding is employed by the majority of the water users to irrigate their fields. Small diversion dams are placed in the stream channels to divert the water into individual distribution systems. Check dams are constructed in the swales to implement flooding once the water reaches the fields.

The Middle Fork Feather River decree (see Table 1) establishes the number

of priority classes for each of the major stream systems within the Middle Fork Feather River service area as follows: Little Last Chance Creek - five; West Side Canal Group - five; Fletcher Creek and Spring Channels - three; Sierra Valley Water Company - one; Webber Creek and tributaries - six; and Smithneck Creek - five.

1969 Distribution

Watermaster service began April 1 in the Middle Fork Feather River service area and continued until September 30. Joe Nessler, Water Resources Engineering Associate, was supervising watermaster during this period. Conrad Lahr, Water Resources Technician II, assisted as deputy watermaster.

An above-average water supply existed in the service area during the season.

West Side Canal Group. The available water supply in the West Side Canal Group, consisting of Hamlin, Miller, and Turner Creeks, was sufficient to satisfy all allotments (five priorities) until the latter part of August. Sufficient water was available to meet irrigation needs for the remainder of the season. The usual rotation schedule was not employed this season.

Fletcher Creek and Spring Channels. Ample water was available to satisfy all allotments (three priorities) until about September 1. For the remainder of the season the users of Fletcher Creek rotated their water every 2 weeks.

Sierra Valley Mutual Water Company. The Little Truckee Ditch delivered 2,609 acre-feet of water to the Sierra Valley Mutual Water Company from July 1 through October 8. Water was distributed to shareholders in accordance with Schedule 9 of the Middle Fork Feather River decree.

Webber Creek and Tributaries. The natural flow of Webber Creek was sufficient to supply all allotments (six priorities) until about August 1. It then decreased gradually until about 50 percent of second priority allotments were being served at the end of the season.

Imported water from the Little Truckee River began supplementing the natural flow of Webber Creek on July 1 to satisfy allotments of the Sierra Valley Mutual Water Company shareholders. This flow decreased gradually from July 20 through the end of the season.

Smithneck Creek. The available water supply was sufficient to satisfy all allotments (five priorities) until approximately June 20. By mid-July the flow had receded to about 30 percent of second priority allotments. A continued decrease occurred until August when only first priority water was available. The usual rotation schedule for second priority users was not used this season due to the plentiful supply of water.

Little Last Chance Creek. Frenchman Dam and Reservoir began its eighth season of operation. Agreements concerning storage and distribution were again negotiated with the users in this stream system. Procedures and specific details of distribution and operation are covered in a separate report prepared by the Operations Section of the Central District.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 17

LITTLE TRUCKEE DITCH AT HEAD

Day	March	April	May	June	July	August	September	Day
1					13*	15	3.8	1
2					32	13	3.8	2
3					31	12	3.8	3
4					30	11	3.8	4
5					30	10	3.8	5
6					29	8.9	4.1	6
7					28	7.9	4.4	7
8					25	7.0	4.9	8
9					25	6.5	4.4	9
10					25	5.7	4.1	10
11					25	5.7	4.1	11
12					25	12	4.4	12
13					25	11	3.8	13
14					28	11	3.6	14
15					42	9.5	3.6	15
16					42	7.9	3.6	16
17					42	7.9	3.6	17
18					43	7.6	3.6	18
19					42	7.0	3.6	19
20					42	6.7	3.6	20
21					41	6.7	3.6	21
22					39	5.9	3.6	22
23					38	5.7	3.8	23
24					36	5.1	3.8	24
25					35	5.1	3.8	25
26					30	4.9	4.1	26
27					28	4.6	4.1	27
28					28	4.4	4.1	28
29					23	4.1	4.4	29
30					21	4.1	4.4	30
31					17	3.8		31
Mean					31.0	7.7	3.9	Mean
Runoff in Acre-Feet					1900	471	234	Runoff in Acre-Feet

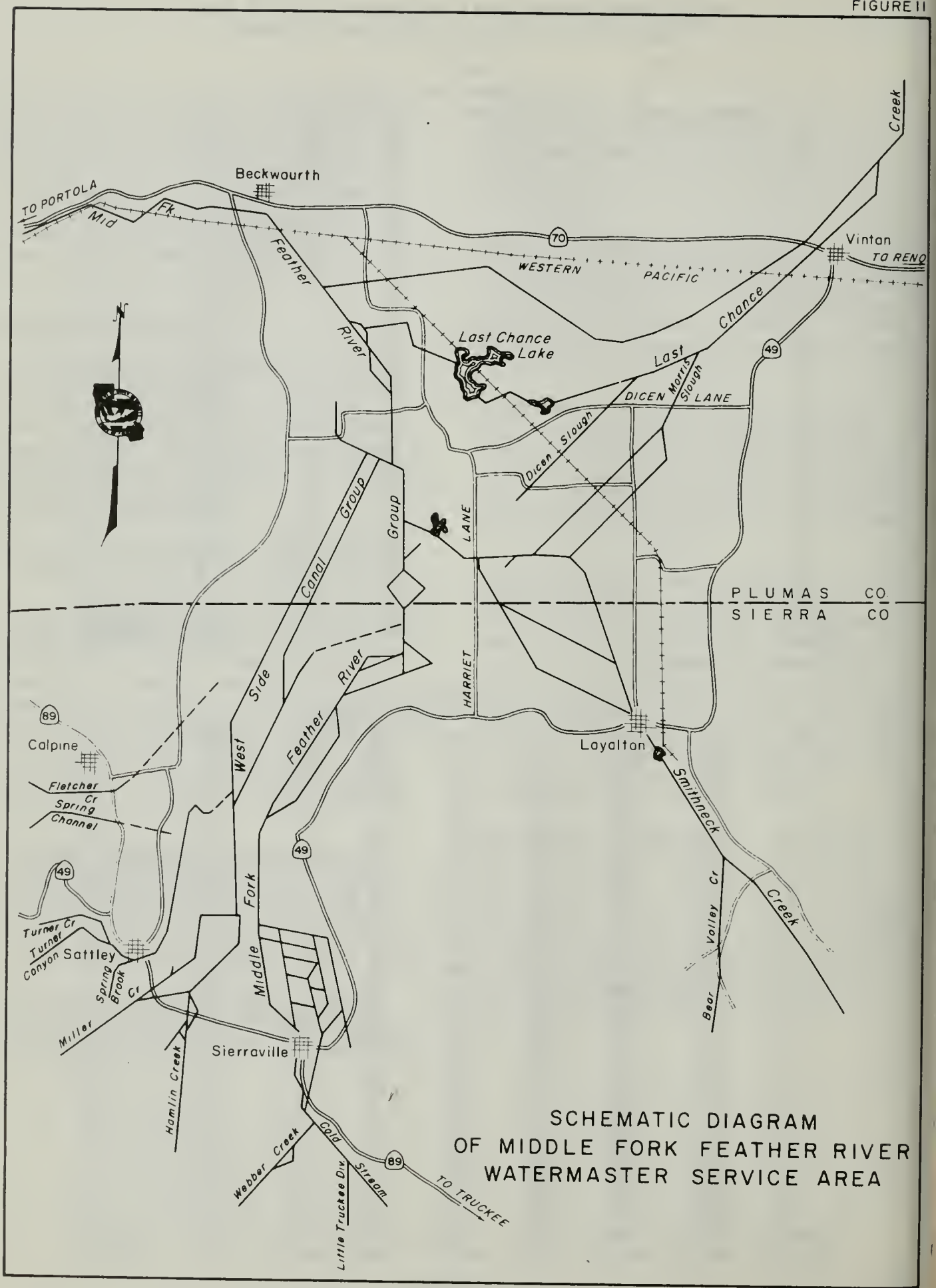
* Beginning of Record

TABLE 18

MIDDLE FORK FEATHER RIVER AT PORTOLA

Day	March	April	May	June	July	August	September	Day
1	194	4430	966	390	124	28	19	1
2	216	3320	988	383	132	26	8.6	2
3	224	2270	1030	372	128	25	5.5	3
4	223	1730	1120	348	118	23	4.6	4
5	238	1480	1100	331	110	23	5.6	5
6	233	1600	990	306	106	22	6.9	6
7	241	1530	875	299	100	21	6.7	7
8	252	1160	857	315	99	24	6.2	8
9	247	996	894	356	94	20	4.5	9
10	252	908	945	374	94	19	3.4	10
11	243	850	1010	405	101	20	3.1	11
12	244	921	1050	439	95	20	3.1	12
13	248	1000	1060	439	91	19	6.6	13
14	269	1090	1080	415	89	17	6.9	14
15	277	1160	1080	384	90	17	5.6	15
16	271	1080	1060	351	89	17	5.1	16
17	283	1080	1000	336	88	19	5.3	17
18	347	1240	924	345	85	17	5.7	18
19	509	1250	846	352	83	16	5.8	19
20	679	1240	792	354	82	17	6.2	20
21	878	1180	773	348	80	20	6.1	21
22	1050	1020	762	336	80	21	6.0	22
23	1410	1150	736	331	82	26	5.9	23
24	1870	1550	672	324	83	28	6.2	24
25	2340	1730	623	296	82	69	6.6	25
26	2660	1590	584	263	80	34	7.6	26
27	2920	1330	563	228	77	34	8.1	27
28	3210	1120	534	197	75	35	8.1	28
29	3410	1010	508	166	58	30	8.3	29
30	3690	967	476	133	31	28	7.6	30
31	4250		423		30	22		31
Mean	1077	1433	849	331	88.9	24.4	6.5	Mean
Runoff in Acre-Feet	66200	85250	52210	19670	5470	1500	387	Runoff in Acre-Feet

FIGURE II


Beckwourth
TO PORTOLA
Mid Fk
Feather River
70
WESTERN PACIFIC
Vintan
TO RENO
Creek
Last Chance Lake
Last Chance
49
DICEN Morris Slough
LANE
Dicen Slough
Canal Group
Group
LANE
PLUMAS CO
SIERRA CO
HARRIET
West Side
Feather River
89
Calpine
Fletcher Cr
Spring Channel
49
Turner Cr
Turner Canyon
Sattley
Spring Brook Cr
Miller
Middle Fork
Sierraville
Hamlin Creek
Webber Creek
Gold Stream
Little Truckee Div
89
TO TRUCKEE
Loyalton
Smithneck Creek
Bear Valley Cr
SCHEMATIC DIAGRAM
OF MIDDLE FORK FEATHER RIVER
WATERMASTER SERVICE AREA

North Fork Cottonwood Creek Watermaster Service Area

The North Fork Cottonwood Creek service area is located in the southwestern part of Shasta County near the towns of Ono and Gas Point. There are 13 water right owners in the area with total allotments of 30.30 cubic feet per second.

North Fork Cottonwood Creek and its tributaries, Moon Creek and Jerusalem Creek, are the major sources of water supply in the area. These creeks rise on the east slopes of the foothills of the Coast Range Mountains. North Fork Cottonwood Creek flows in a southeasterly direction to its confluence with Cottonwood Creek near Gas Point. The area is characterized by high summer temperatures and moderate rainfall. The irrigable land consists of sparsely scattered parcels separated by steep, brushy hills. These lands are at about the 1,000-foot elevation.

A schematic drawing of the North Fork Cottonwood Creek stream system is presented as Figure 12, page 63.

Water Supply

Snowmelt contributes to the flow in North Fork Cottonwood Creek during the early weeks of the irrigation season. However, perennial springs provide the major source of supply during the summer and fall months. The flow is normally sufficient to supply all demands. In dry years, however, the available supply may be as low as 30 to 40 percent of the decreed allotments.

A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table 19. This stream gaging station is located downstream from most points of diversion on the creek, but gives a general indication of the water supply.

Method of Distribution

The general practice throughout the area is to irrigate by wild flooding. One water user, however, pumps directly from the creek using a sprinkler system to irrigate his crops. Pumping was necessary at this diversion point because the irrigated land was higher in elevation than the creek channel.

The North Fork Cottonwood Creek decree (see Table 1) provides for distribution of water on an equal and correlative basis for all users (one priority).

1969 Distribution

Watermaster service began in the North Fork Cottonwood Creek service area on July 1 and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in North Fork Cottonwood Creek was extremely good. Very high flows occurred during the spring months. Although the streamflow decreased significantly during late July, August and September, all demands were met, due to the limited or non-use of allotments by a few water right owners.

The stream gaging station near Igo recorded a total of 2,400 acre-feet of runoff between July 1 and September 30. This is approximately 90 percent of the mean for a 13-year period of record.

Special Occurrences

Rainbow Lake remained far below its storage capacity due to the unsafe condition of Misselbeck Dam. Curtailment of storage will continue until extensive repairs are made.

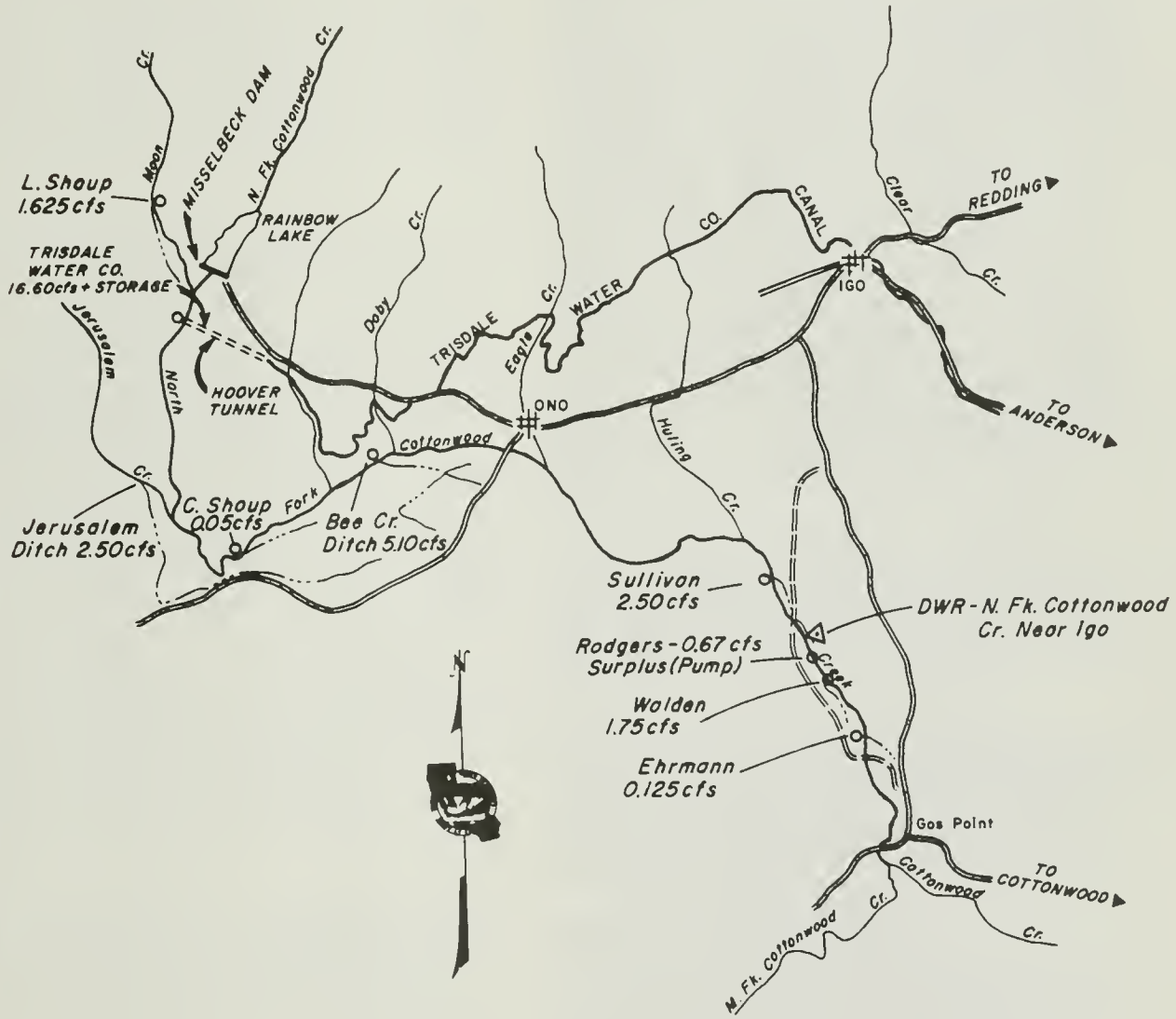
NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

1989 Daily Mean Olscharge in Cubic Feet Per Second

TABLE 19

NORTH FORK COTTONWOOD CREEK NEAR IGO

Day	March	April	May	June	July	August	September	Day
1	1030	593	305	149	34	8.9	8.7	1
2	749	614	290	136	31	9.1	6.8	2
3	602	567	275	116	33	7.7	9.1	3
4	545	523	262	69	31	8.4	9.2	4
5	497	567	252	61	31	7.0	8.6	5
6	474	509	243	57	29	7.6	8.8	6
7	439	461	267	57	28	8.1	10	7
8	403	437	272	57	27	6.5	11	8
9	374	426	268	62	25	5.8	11	9
10	339	418	270	74	19	8.6	11	10
11	319	431	255	89	19	7.2	11	11
12	333	468	245	76	19	8.7	11	12
13	295	445	236	64	19	7.7	10	13
14	285	421	234	64	19	8.3	10	14
15	261	410	210	80	19	7.2	11	15
16	244	390	199	55	19	8.4	11	16
17	412	394	191	52	19	8.1	11	17
18	369	378	183	53	19	7.3	12	18
19	341	372	175	57	18	7.1	13	19
20	388	371	169	57	18	12	13	20
21	436	379	163	53	18	13	14	21
22	426	405	152	50	16	13	13	22
23	452	441	144	47	13	11	13	23
24	485	387	152	45	13	11	11	24
25	470	357	154	42	13	10	11	25
26	483	340	162	39	13	10	11	26
27	517	326	152	38	12	10	10	27
28	562	320	148	37	12	10	6.5	28
29	588	313	156	34	11	10	8.8	29
30	610	310	161	34	10	10	9.3	30
31	619		149		10	10		31
Mean	462	426	209	62.8	19.9	9.0	10.5	Mean
Runoff In Acre-Feet	28420	25340	12880	3740	1220	553	624	Runoff In Acre-Feat



△ Permonent Recorder Station

SCHEMATIC DIAGRAM
OF N. FK. COTTONWOOD CR.
WATERMASTER SERVICE AREA

North Fork Pit River Watermaster Service Area

The North Fork Pit River service area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends from the Oregon border about 45 miles southward to a point just south of Alturas. There are 92 water right owners in the area with total allotments of 214.655 cubic feet per second.

A number of small independent stream systems, rising on the west slope of the Warner Mountains and generally following a westerly direction, comprise the major source of water supply. Three of these streams, New Pine Creek, Cottonwood Creek, and Davis Creek, are tributary to Goose Lake. All other streams in the service area are tributary to the North Fork Pit River. They are: Linville Creek, Franklin Creek, Joseph Creek, Thoms Creek, and Parker Creek. The North Fork Pit River flows in a southerly direction from the south rim of Goose Lake to its confluence with the South Fork Pit River immediately below Alturas. Streams tributary to Goose Lake do not contribute directly to the flow of the North Fork Pit River, since the lake has not spilled into the river for nearly 100 years.

The place of use in the northern half of the area lies in a relatively long, narrow, sloping strip extending between the eastern shore of Goose Lake and the foothills of the Warner Mountains. The places of use in the southern half of the area, which are supplied from the North Fork Pit River and its tributaries, are primarily in the narrow valleys bordering the streams.

A schematic drawing of each major stream system within the North Fork Pit River service area is presented as Figures 13 through 13k, pages 74 through 85.

Water Supply

The streams which serve the area are fed by snowmelt runoff and springs in the Warner Mountains. A large portion of the runoff occurs early in the spring, decreasing rapidly in May and June. The watershed of New Pine Creek, however, is at a higher elevation and maintains a good supply well into the summer. After the snowpack is depleted, perennial springs at the headwaters of the tributaries are the main sources of water supply. Linville Creek, with its small drainage basin, depends almost entirely on springs at its head. Gleason Creek, Thoms Creek, and Cottonwood Creek are usually dry in August, except during years of above-average water supply.

Some supplemental water is stored in small reservoirs throughout the area, none of which are operated by the watermaster. However, the inflows to some of these reservoirs are under the watermaster's jurisdiction.

Records of daily mean discharge at several stream gaging stations in the North Fork Pit River service area are presented in Tables 20 through 30, pages 68 through 73.

Methods of Distribution

Irrigation is accomplished primarily by wild flooding from field ditches located along high spots in the meadows. Various types of diversion structures are used to divert the natural streamflow into small earth ditches which convey it to the meadows. At present there is a limited amount of sprinkler irrigation, some by naturally developed pressure and some by direct pumping from small sumps in the ditches. Subirrigation by the use of large flashboard dams to raise the water level in the stream channel is being practiced on the North

Fork Pit River between Parker Creek and Alturas. The several decrees (see Table 1) which apply to the North Fork Pit River service area establish the following number of priority classes for the various stream systems: New Pine Creek - four; Cottonwood Creek - six; Davis Creek - four; Linville Creek - two; Franklin Creek - four; Joseph Creek - four; Thoms Creek - three; Parker Creek - four; Shields Creek - four; Gleason Creek - five; and North Fork Pit River - five.

1969 Distribution

Watermaster service began April 20 in the North Fork Pit River service area and continued until September 30. Charles H. Holmes, Assistant Civil Engineer, was watermaster during this period.

The available water supply during the spring months was excellent throughout the service area. Because of a very warm summer, however, streamflows during the latter part of the season were at or near average conditions.

New Pine Creek. Surplus water was available to New Pine Creek water right owners throughout the period that the proration or correlative system of distribution was in effect (until June 30). Commencing July 1, in accordance with provisions of the decree, distribution was based on the priority system (four priorities). Fourth priority allotments were satisfied until August 7. Thereafter, the flow gradually decreased until approximately 90 percent of second priority allotments were being met at the end of the season.

Cottonwood Creek. A sufficient water supply existed in Cottonwood Creek to satisfy all allotments (six priorities) until late spring. The fourth priority allotments were served until late June. Thereafter, the flow decreased gradually, reaching first priority level on August 1. By the end of the season the flow had decreased until only about 6 percent of first priority allotments were served.

Davis Creek. The available water supply in Davis Creek was sufficient to satisfy all allotments (four priorities) until June 2. One hundred percent of third priority allotments were served until June 22. The flow then steadily decreased, reaching 100 percent of the second priority allotments on September 1. At the end of the season the flow had receded slightly to 63 percent of second priority allotments.

Linville Creek. The available water supply in Linville Creek decreased steadily from the time watermaster service began until the end of the irrigation season. A small percentage of second priority allotments (two priorities) was supplied from May 10 to May 25. The available supply for first priority allotments ranged between 100 percent on May 25 to 66 percent at the end of the season.

Franklin Creek. The available water supply in Franklin Creek was sufficient to satisfy all allotments (four priorities) from May 8 until May 17. One hundred percent of third priorities were served until May 17. The flow then gradually decreased until mid-September when 16 percent of third priority allotments were being served. On September 15 the winter schedule of priorities became effective. Under this schedule, only 59 percent of second priority allotments were met.

Joseph Creek. A surplus water supply existed in Joseph Creek until June 19. The flow then receded rapidly until on July 25 only first priority allotments (four priorities) were served. Thereafter, the flow gradually decreased to 80 percent of first priority allotments at the end of the season.

Thoms Creek. A sufficient water supply existed in Thoms Creek to meet all

allotments (three priorities) until July 9. The flow then gradually decreased to 18 percent of third priority allotments at the end of the season.

Gleason Creek. The available water supply in Gleason Creek was sufficient to satisfy fourth priority allotments (five priorities) until May 4. The flow then rapidly dropped to 100 percent of second priority allotments by May 28. By July 24 the creek was dry.

Shields Creek. A surplus water supply existed in Shields Creek until mid-June. The flow decreased rapidly until approximately 65 percent of second priority allotments (four priorities) were served on August 8. The supply then gradually decreased until the end of September when 25 percent of second priority allotments were being supplied.

Parker Creek. The flow in Parker Creek peaked in mid-May and continued to serve 100 percent of all allotments (four priorities) until mid-June. From then until late September the flow continued to decrease gradually. At that time about 30 percent of third priority allotments were served.

North Fork Pit River. A surplus water supply existed in the North Fork Pit River until June 15. On that date the Dorris Reservoir allotments was reduced. The flow then decreased rapidly until June 19 when only first priority allotments (five priorities) were being served. The decrease continued until July 9 when only stockwater was available. This condition continued throughout the remainder of the season.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 20

NEW PINE CREEK BELOW SCHROEDER'S

Day	March	April	May	June	July	August	September	Day
1			54	28	14	8.8	6.9	1
2			53	25	13	8.5	6.8	2
3			54	24	13	8.5	6.8	3
4		38*	48	24	13	8.3	6.8	4
5		39	49	25	13	8.3	6.8	5
6		36	58	24	12	8.1	6.5	6
7		36	71	24	12	8.0	6.5	7
8		35	75	24	12	8.0	6.5	8
9		36	89	23	12	7.9	6.5	9
10		37	76	23	12	7.9	6.3	10
11		39	71	22	12	7.8	6.3	11
12		40	58	22	11	7.8	6.5	12
13		41	49	22	11	7.8	6.3	13
14		40	42	22	11	7.8	6.3	14
15		39	40	20	10	7.8	6.3	15
16		39	34	20	10	7.8	6.3	16
17		40	40	19	10	7.6	6.0	17
18		42	41	19	10	7.6	6.0	18
19		48	40	18	10	7.6	6.3	19
20		53	39	18	10	7.4	6.3	20
21		58	38	17	10	7.1	6.0	21
22		67	38	17	10	7.1	6.0	22
23		67	36	17	10	7.0	6.0	23
24		57	33	16	10	7.0	6.0	24
25		52	30	16	10	7.0	6.0	25
26		47	28	15	9.4	7.0	6.0	26
27		46	28	16	9.3	7.0	6.0	27
28		46	27	15	9.1	7.0	6.0	28
29		58	28	15	9.0	7.0	6.0	29
30		57	26	14	9.0	7.0	6.0	30
31			26		8.8	6.9		31
Mean		45.7	45.8	20.1	10.8	7.6	6.3	Mean
Runoff In Acre-Feet		2450	2810	1190	666	469	375	Runoff In Acre-Feet

* Beginning of Record

TABLE 21

COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

Day	March	April	May	June	July	August	September	Day
1				4.8	1.1	0.4	0.4	1
2				4.5	1.1	0.4	0.4	2
3				4.0	1.1	0.4	0.4	3
4				4.0	1.0	0.4	0.4	4
5				3.9	1.0	0.4	0.4	5
6				3.7	1.0	0.3	0.4	6
7				3.5	1.0	0.3	0.4	7
8				3.2	1.0	0.3	0.4	8
9				3.0	0.9	0.3	0.4	9
10				2.7	0.9	0.3	0.4	10
11				2.5	0.8	0.4	0.4	11
12				2.3	0.8	0.4	0.4	12
13				2.1	0.8	0.4	0.4	13
14				2.0	0.8	0.4	0.4	14
15				1.9	0.8	0.4	0.3	15
16				1.7	0.8	0.4	0.3	16
17				1.6	0.8	0.4	0.3	17
18				1.5	0.8	0.4	0.3	18
19				1.4	0.7	0.4	0.3	19
20				1.3	0.7	0.5	0.3	20
21				1.2	0.7	0.5	0.3	21
22				1.2	0.6	0.5	0.3	22
23			6.8*	1.2	0.6	0.5	0.3	23
24			6.8	1.1	0.6	0.5	0.3	24
25			7.1	1.1	0.5	0.5	0.2	25
26			7.1	1.1	0.5	0.5	0.2	26
27			6.8	1.1	0.4	0.5	0.2	27
28			5.8	1.1	0.4	0.5	0.2	28
29			5.1	1.1	0.4	0.5	0.2	29
30			4.5	1.1	0.4	0.5	0.2	30
31			4.8		0.4	0.4		31
Mean			6.1	2.2	0.8	0.4	0.3	Mean
Runoff In Acre-Feet			109	133	46	26	19	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 22

DAVIS CREEK AT OLD FISH WHEEL

Day	March	April	May	June	July	August	September	Day
1			51	43	14	7.2	4.8	1
2			50	42	14	7.2	4.8	2
3		47*	51	40	14	7.5	4.0	3
4		47	50	39	16	7.5	4.8	4
5		51	50	35	16	7.5	5.0	5
6		47	54	29	16	8.3	5.0	6
7		43	54	29	17	8.3	5.3	7
8		37	59	39	17	7.5	4.8	8
9		33	75	39	16	7.5	4.8	9
10		33	76	30	15	7.2	4.8	10
11		35	80	29	14	7.5	6.3	11
12		38	74	25	13	7.5	7.5	12
13		40	75	24	13	7.2	7.5	13
14		41	77	24	12	7.0	7.0	14
15		40	69	23	11	6.3	6.0	15
16		34	68	21	10	6.3	5.3	16
17		38	68	20	9.6	6.0	5.3	17
18		41	68	20	9.0	6.3	6.0	18
19		40	70	21	8.5	6.3	4.8	19
20		44	62	22	8.5	5.0	4.8	20
21		51	62	20	8.5	4.8	4.8	21
22		60	58	20	8.5	4.8	4.8	22
23		78	58	22	8.5	4.8	4.8	23
24		64	59	19	8.5	4.8	4.8	24
25		56	58	19	8.5	6.3	4.8	25
26		49	55	18	8.5	5.3	3.9	26
27		47	52	18	8.3	5.0	3.9	27
28		46	48	17	8.3	6.3	3.9	28
29		49	46	17	7.5	5.3	3.9	29
30		50	44	15	7.0	5.0	3.9	30
31			44		7.0	4.8		31
Mean		45.7	60.2	26.0	11.4	6.4	5.1	Mean
Runoff In Acre-Feet		2540	3700	1540	700	393	302	Runoff In Acre-Feet

* Beginning of Record

TABLE 23

LINVILLE CREEK AT OLD POWER HOUSE

Day	March	April	May	June	July	August	September	Day
1			1.9	3.4	3.0	2.6	2.6	1
2			1.8	3.3	3.0	2.6	2.6	2
3			1.8	3.3	3.0	2.6	2.6	3
4		1.8*	1.8	3.2	2.9	2.6	2.6	4
5		1.8	1.8	3.2	2.9	2.6	2.6	5
6		1.8	1.8	3.2	2.9	2.5	2.6	6
7		1.8	2.0	3.2	2.8	2.5	2.6	7
8		1.8	2.6	3.5	2.8	2.5	2.6	8
9		1.8	3.3	3.6	2.7	2.5	2.6	9
10		1.8	4.0	3.4	2.7	2.4	2.6	10
11		1.8	4.7	3.3	2.6	2.4	2.6	11
12		1.8	4.8	3.3	2.6	2.4	2.6	12
13		1.8	4.7	3.2	2.6	2.4	2.6	13
14		1.8	4.7	3.2	2.6	2.4	2.6	14
15		1.8	4.5	3.2	2.6	2.4	2.6	15
16		1.8	4.5	3.2	2.6	2.5	2.6	16
17		1.8	4.4	3.1	2.6	2.5	2.6	17
18		1.9	4.4	3.1	2.6	2.5	2.6	18
19		1.8	4.4	3.3	2.6	2.5	2.6	19
20		1.8	4.2	3.2	2.7	2.5	2.6	20
21		1.8	4.1	3.2	2.7	2.5	2.6	21
22		1.9	4.1	3.1	2.6	2.6	2.6	22
23		2.1	4.0	3.2	2.6	2.6	2.6	23
24		2.1	4.0	3.1	2.6	2.6	2.6	24
25		2.0	4.0	3.1	2.6	2.6	2.6	25
26		1.9	3.9	3.1	2.6	2.6	2.6	26
27		1.8	3.9	3.1	2.6	2.6	2.6	27
28		1.8	3.8	3.1	2.6	2.6	2.6	28
29		1.9	3.7	3.1	2.6	2.6	2.6	29
30		1.9	3.6	3.1	2.6	2.6	2.6	30
31			3.5		2.6	2.6		31
Mean		1.9	3.6	3.3	2.7	2.5	2.6	Mean
Runoff In Acre-Feet		99	222	192	166	156	155	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 24

FRANKLIN CREEK ABOVE DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1			8.0	5.8	3.6	3.0	2.2	1
2			7.3	5.5	3.5	2.8	2.1	2
3			7.2	4.4	3.5	2.8	2.0	3
4			6.8	5.2	3.5	2.8	2.1	4
5		6.2*	6.8	5.3	3.5	2.8	2.2	5
6		5.6	7.5	5.3	3.4	2.8	2.2	6
7		5.1	11	5.1	3.4	2.8	2.1	7
8		5.1	19	5.1	3.3	3.0	2.1	8
9		5.5	19	5.1	3.3	3.0	2.1	9
10		6.2	20	5.1	3.3	3.0	2.1	10
11		6.2	21	5.1	3.2	3.0	2.1	11
12		6.0	20	5.0	3.1	3.0	2.1	12
13		5.6	19	4.9	3.1	3.0	2.0	13
14		6.5	20	4.8	3.1	2.6	1.9	14
15		6.5	18	4.7	3.1	2.5	1.9	15
16		6.6	16	4.7	3.0	2.7	1.8	16
17		6.0	13	4.7	3.1	2.4	1.8	17
18		6.1	11	4.7	3.1	2.4	1.8	18
19		6.5	8.0	4.8	3.1	2.4	1.9	19
20		7.3	8.0	4.6	3.0	2.4	1.9	20
21		9.0	8.0	4.5	2.9	2.4	1.9	21
22		12	8.0	4.0	2.9	2.3	1.9	22
23		12	7.2	4.6	2.9	2.3	1.9	23
24		7.5	6.7	4.5	3.0	2.3	1.9	24
25		6.8	6.2	4.5	3.0	2.3	1.8	25
26		6.7	6.6	4.1	3.0	2.3	1.8	26
27		6.5	6.5	4.0	3.0	2.3	1.9	27
28		7.6	6.5	3.9	3.0	2.3	1.9	28
29		7.5	6.4	3.8	3.0	2.3	1.9	29
30		8.0	5.0	3.6	3.0	2.2	1.9	30
31			5.0		3.0	2.2		31
Mean		6.9	10.9	4.7	3.2	2.6	2.0	Mean
Runoff In Acre-Feet		358	673	280	194	160	117	Runoff In Acre-Feet

* Beginning of Record

TABLE 25

JOSEPH CREEK BELOW COUCH CREEK

Day	March	April	May	June	July	August	September	Day
1			27	17	5.5	1.9	1.7	1
2			23	16	5.3	1.9	1.7	2
3		46*	22	16	5.3	1.8	1.7	3
4		47	22	16	5.5	1.8	1.7	4
5		47	22	15	5.5	1.8	1.7	5
6		42	18	13	5.5	1.8	1.7	6
7		36	18	12	5.0	1.8	1.7	7
8		32	19	15	4.7	1.8	1.7	8
9		33	34	22	4.1	1.8	1.7	9
10		32	42	17	3.8	1.8	1.7	10
11		34	48	15	3.1	1.8	1.7	11
12		39	48	13	2.9	1.8	1.7	12
13		39	45	10	3.1	1.8	1.7	13
14		39	33	11	3.2	1.8	1.7	14
15		30	33	9.8	3.1	1.8	1.7	15
16		36	30	9.4	2.9	1.8	1.7	16
17		39	33	9.2	2.8	1.8	1.7	17
18		45	33	9.6	2.3	1.8	1.7	18
19		42	33	9.2	2.3	1.8	1.7	19
20		42	30	8.5	2.7	1.8	2.0	20
21		48	29	8.3	2.6	1.8	1.9	21
22		54	26	8.2	2.4	1.8	1.9	22
23		55	27	8.7	2.4	1.8	1.9	23
24		49	27	8.4	2.4	1.8	1.9	24
25		45	27	8.3	2.2	1.8	1.9	25
26		39	27	8.2	2.0	1.8	1.9	26
27		33	26	6.5	2.0	1.8	1.9	27
28		32	24	6.2	2.0	1.8	1.9	28
29		32	21	6.0	2.6	1.8	1.9	29
30		30	20	5.5	2.2	1.7	1.9	30
31			18		2.0	1.7		31
Mean		39.9	28.5	11.3	3.3	1.8	1.8	Mean
Runoff In Acre-Feet		2230	1760	670	206	112	106	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 26

NORTH FORK PIT RIVER BELOW THOMS CREEK

Day	March	April	May	June	July	August	September	Day
1			122	57	15	1.2	4.0	1
2			121	52	16	1.7	4.1	2
3		181*	118	45	11	3.5	11	3
4		170	113	42	10	6.0	14	4
5		180	113	42	14	6.0	14	5
6		190	118	52	18	6.0	13	6
7		180	132	47	15	6.0	12	7
8		152	135	41	10	6.0	11	8
9		144	137	51	8.0	6.0	7.0	9
10		140	145	114	6.5	6.0	5.2	10
11		144	152	101	5.0	5.2	5.7	11
12		149	152	67	4.3	5.2	6.5	12
13		148	148	51	4.0	5.0	7.0	13
14		153	144	57	4.1	5.0	7.5	14
15		141	137	66	3.9	5.0	8.0	15
16		130	126	40	3.5	5.0	8.2	16
17		138	124	44	3.2	5.0	9.4	17
18		153	125	38	3.2	4.8	11	18
19		144	122	48	2.5	4.8	12	19
20		149	113	44	2.3	4.8	12	20
21		159	103	36	2.1	4.5	13	21
22		178	100	34	2.0	4.3	13	22
23		182	98	38	1.9	4.3	14	23
24		182	94	38	1.9	4.1	16	24
25		156	90	31	1.8	4.3	15	25
26		152	88	28	1.8	4.3	14	26
27		149	85	25	1.7	4.3	14	27
28		146	83	24	1.2	4.3	14	28
29		143	75	22	1.0	4.1	14	29
30		137	67	20	1.3	4.0	14	30
31			59		1.0	4.1		31
Mean		156	114	46.5	5.7	4.7	10.8	Mean
Runoff In Acre-Feet		8670	7020	2770	351	287	642	Runoff In Acre-Feet

* Beginning of Record

TABLE 27

THOMS CREEK AT CEDARVILLE-ALTURAS HIGHWAY

Day	March	April	May	June	July	August	September	Day
1			33	9.6	3.0	0.3	0.0	1
2			30	8.0	2.5	0.3	0.0	2
3			29	8.0	2.4	0.3	0.0	3
4			27	7.0	2.2	0.3	0.2	4
5			27	7.4	2.3	0.3	0.2	5
6			29	7.0	2.5	0.3	0.2	6
7			26	6.5	2.3	0.3	0.2	7
8		30*	31	8.0	2.2	0.3	0.2	8
9		29	33	13	2.0	0.3	0.2	9
10		32	34	10	1.5	0.3	0.3	10
11		35	36	9.6	1.1	0.3	0.3	11
12		40	34	7.0	1.0	0.3	0.3	12
13		40	31	6.5	0.9	0.3	0.3	13
14		39	39	9.6	0.9	0.3	0.3	14
15		32	36	9.3	0.9	0.2	0.3	15
16		32	32	6.7	0.8	0.2	0.3	16
17		35	30	9.6	0.8	0.2	0.3	17
18		38	29	6.0	0.7	0.2	0.3	18
19		39	29	5.7	0.7	0.2	0.3	19
20		45	25	3.8	0.6	0.1	0.3	20
21		49	24	3.2	0.6	0.1	0.4	21
22		53	23	2.5	0.5	0.0	0.4	22
23		49	22	3.6	0.5	0.0	0.4	23
24		39	21	3.8	0.5	0.0	0.4	24
25		32	20	4.3	0.4	0.0	0.4	25
26		29	20	4.2	0.4	0.0	0.4	26
27		26	18	3.8	0.4	0.0	0.4	27
28		31	16	3.7	0.4	0.0	0.4	28
29		35	14	3.4	0.4	0.0	0.4	29
30		34	12	3.0	0.4	0.0	0.4	30
31			11		0.4	0.0		31
Mean		36.7	26.5	6.5	1.2	0.2	0.3	Mean
Runoff In Acre-Feet		1670	1630	384	72	11	17	Runoff In Acre-Feet

* Beginning of Record.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1988 Daily Mean Discharge in Cubic Feet Per Second

TABLE 28

PARKER CREEK AT FOGARTY RANCH

Day	March	April	May	June	July	August	September	Day
1			113	31	11	7.8	6.5	1
2			105	28	11	7.7	8.5	2
3		118*	101	28	11	7.7	8.5	3
4		124	100	21	11	7.6	8.8	4
5		123	101	16	11	7.5	6.8	5
6		108	108	14	11	7.5	6.6	6
7		105	119	12	11	7.4	6.6	7
8		96	129	15	11	7.4	8.6	8
9		92	130	18	10	7.4	6.6	8
10		92	131	17	10	7.3	6.6	10
11		99	139	16	10	7.2	6.6	11
12		111	136	14	10	7.1	6.6	12
13		106	132	12	9.8	7.1	6.6	13
14		95	125	14	9.5	7.0	6.6	14
15		79	114	13	9.2	7.0	6.7	15
16		81	110	12	9.0	6.9	6.7	16
17		83	110	12	8.9	6.9	6.7**	17
18		106	110	12	8.7	6.8		18
19		96	106	11	8.6	6.8		19
20		116	96	12	8.4	6.7		20
21		114	85	11	8.4	6.7		21
22		114	80	11	8.4	6.6		22
23		119	79	11	8.4	6.6		23
24		125	76	11	8.3	6.6		24
25		113	72	11	8.3	6.5		25
26		103	67	11	8.2	6.5		26
27		103	58	11	8.1	6.4		27
28		114	50	11	8.1	6.4		28
29		119	45	11	8.0	6.5		29
30		116	43	12	7.9	6.5		30
31			36		7.9	6.5		31
Mean		106	97.0	14.6	9.4	7.0	6.6	Mean
Runoff In Acre-Feet		5870	5960	871	575	430	222	Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 29

SHIELDS CREEK BELOW PEPPERDINE RANCH

Day	March	April	May	June	July	August	September	Day
1			9.0	6.2	4.9	3.0	1.9	1
2			8.7	6.8	5.1	2.5	1.9	2
3			8.4	7.3	3.2	2.4	1.9	3
4			8.6	7.0	4.3	2.2	2.1	4
5			8.5	6.8	4.4	2.1	2.2	5
6			8.7	6.7	4.5	2.8	2.2	6
7			8.8	6.7	4.2	2.9	2.4	7
8			9.1	7.5	4.3	2.9	2.4	8
9			9.2	7.8	4.4	2.5	2.4	9
10			9.3	8.0	4.3	2.4	2.3	10
11			9.6	8.3	4.3		1.8**	11
12			9.5	7.0	4.2	N		12
13			9.4	6.8	4.1	O		13
14			9.8	6.7	4.0			14
15			9.2	6.7	4.0	R		15
16			9.0	6.6	4.0	E		16
17			8.9	6.5	3.5	C		17
18			8.9	6.4	3.5	O		18
19			8.8	6.4	3.6	R		19
20			8.3	8.4	3.4	D		20
21			7.2	6.2	3.4	2.3		21
22			7.4	6.1	3.3	2.4		22
23			8.2	6.2	3.3	2.3		23
24		9.9*	7.8	6.2	3.4	2.2		24
25		9.6	7.3	6.0	3.3	2.1		25
26		9.1	6.9	5.9	3.3	2.2		26
27		9.0	6.9	5.7	2.9	2.2		27
28		9.2	7.0	5.5	2.7	2.3		28
29		9.3	7.6	5.3	3.0	2.1		29
30		9.1	7.5	5.1	3.0	2.0		30
31			6.7		2.9	1.9		31
Mean		9.3	8.4	6.6	3.8	2.4	2.1	Mean
Runoff In Acre-Feet		129	516	390	231	99	47	Runoff In Acre-Feet

* Beginning of Record
** End of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

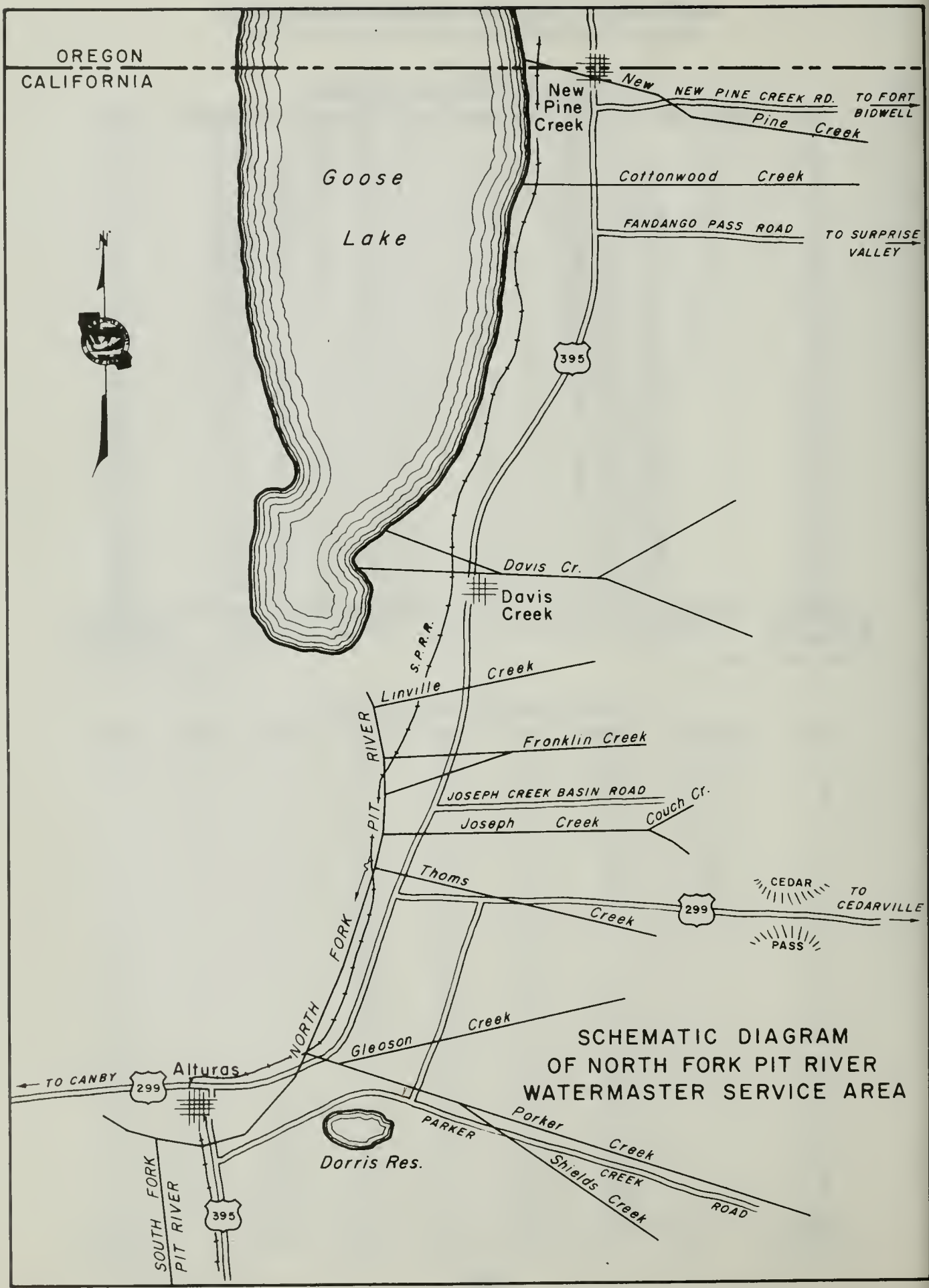
TABLE 30

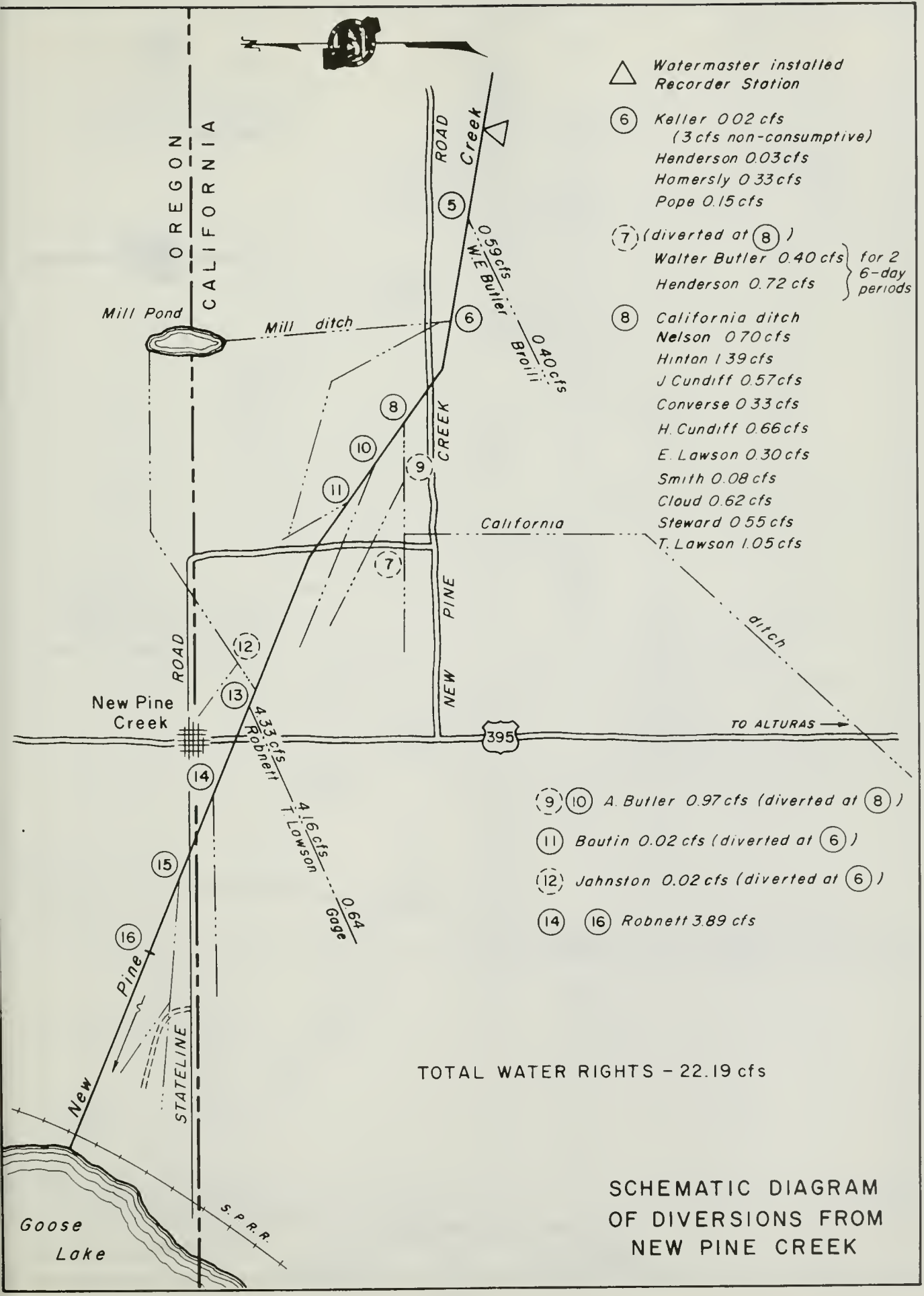
PARKER CREEK ABOVE HIGHWAY 395 NEAR ALTURAS

Day	March	April	May	June	July	August	September	Day
1			52	12	3.6	1.9	0.4	1
2		75*	47	10	3.5	1.8	0.4	2
3		58	46	6.1	5.2	1.8	0.4	3
4		57	43	5.5	5.2	1.8	0.4	4
5		60	39	6.0	5.4	1.8	0.5	5
6		54	36	4.8	6.1	1.9	0.5	6
7		48	38	4.0	5.8	1.9	0.5	7
8		44	39	4.4	5.9	1.8	0.5	8
9		40	44	11	5.9	1.8	0.5	9
10		41	44	9.1	6.0	1.8	0.5	10
11		47	48	9.5	5.2	1.7	0.6	11
12		73	50	6.4	4.9	1.7	0.6	12
13		67	48	4.2	4.7	1.7	0.6	13
14		65	46	4.2	4.6	1.7	0.6	14
15		60	42	4.9	4.6	1.7	0.6	15
16		61	37	4.5	4.5	1.8	0.6	16
17		66	36	4.3	4.0	1.9	0.6	17
18		74	35	4.2	3.9	1.7	0.6	18
19		68	35	4.7	3.2	1.7	0.6	19
20		77	32	4.6	2.6	1.6	0.7	20
21		79	28	4.6	2.6	1.4	0.7	21
22		80	25	4.0	2.6	1.0	0.7	22
23		78	24	4.2	2.7	0.8	0.7	23
24		72	23	4.2	2.9	0.7	0.7	24
25		68	23	4.2	2.8	0.5	0.7	25
26		57	21	4.2	2.8	0.5	0.8	26
27		55	18	4.3	2.4	0.4	0.8	27
28		58	17	4.4	2.3	0.4	0.8	28
29		60	17	4.2	2.2	0.4	0.8	29
30		55	15	3.8	2.0	0.4	0.8	30
31			14		1.9	0.4		31
Mean		61.9	34.3	5.6	3.9	1.4	0.6	Mean
Runoff In Acre-Feet		3560	2110	330	242	84	36	Runoff In Acre-Feet

* Beginning of Record

FIGURE 13


OREGON
CALIFORNIA
New Pine Creek
New Pine Creek Rd.
To Fort Bidwell
Pine Creek
Goose Lake
Cottonwood Creek
Fandango Pass Road
To Surprise Valley
N
395
Davis Cr.
Davis Creek
S.P.R.R.
Linville Creek
North Fork Pit River
Fronklin Creek
Joseph Creek Basin Road
Joseph Creek
Couch Cr.
Thoms Creek
299
Cedar Pass
To Cedarville
Gleason Creek
To Canby
Alturas
Dorris Res.
Parker Creek
Shields Creek
South Fork Pit River
395
SCHEMATIC DIAGRAM
OF NORTH FORK PIT RIVER
WATERMASTER SERVICE AREA



TOTAL WATER RIGHTS – 22.19 cfs

SCHEMATIC DIAGRAM OF DIVERSIONS FROM NEW PINE CREEK

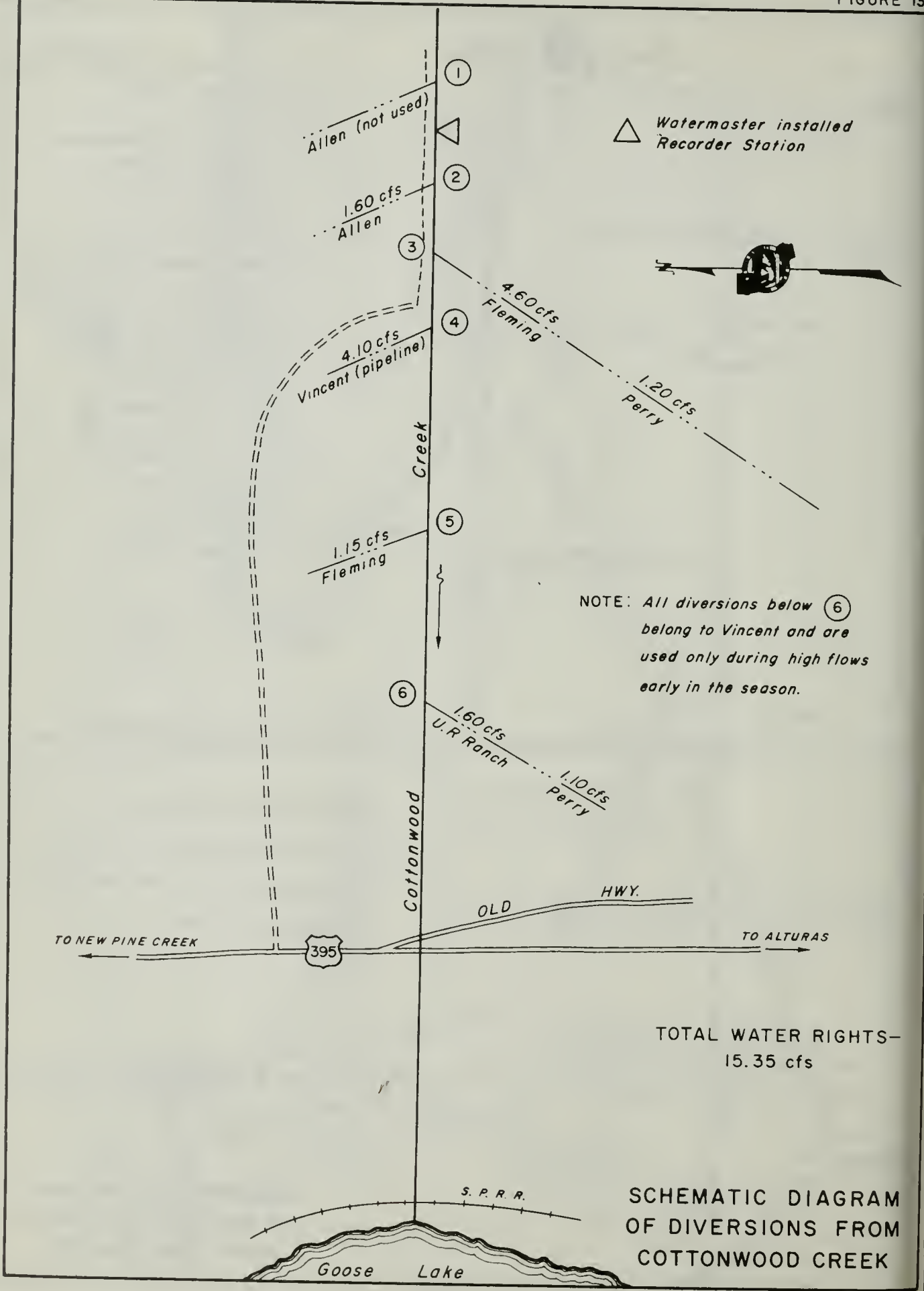
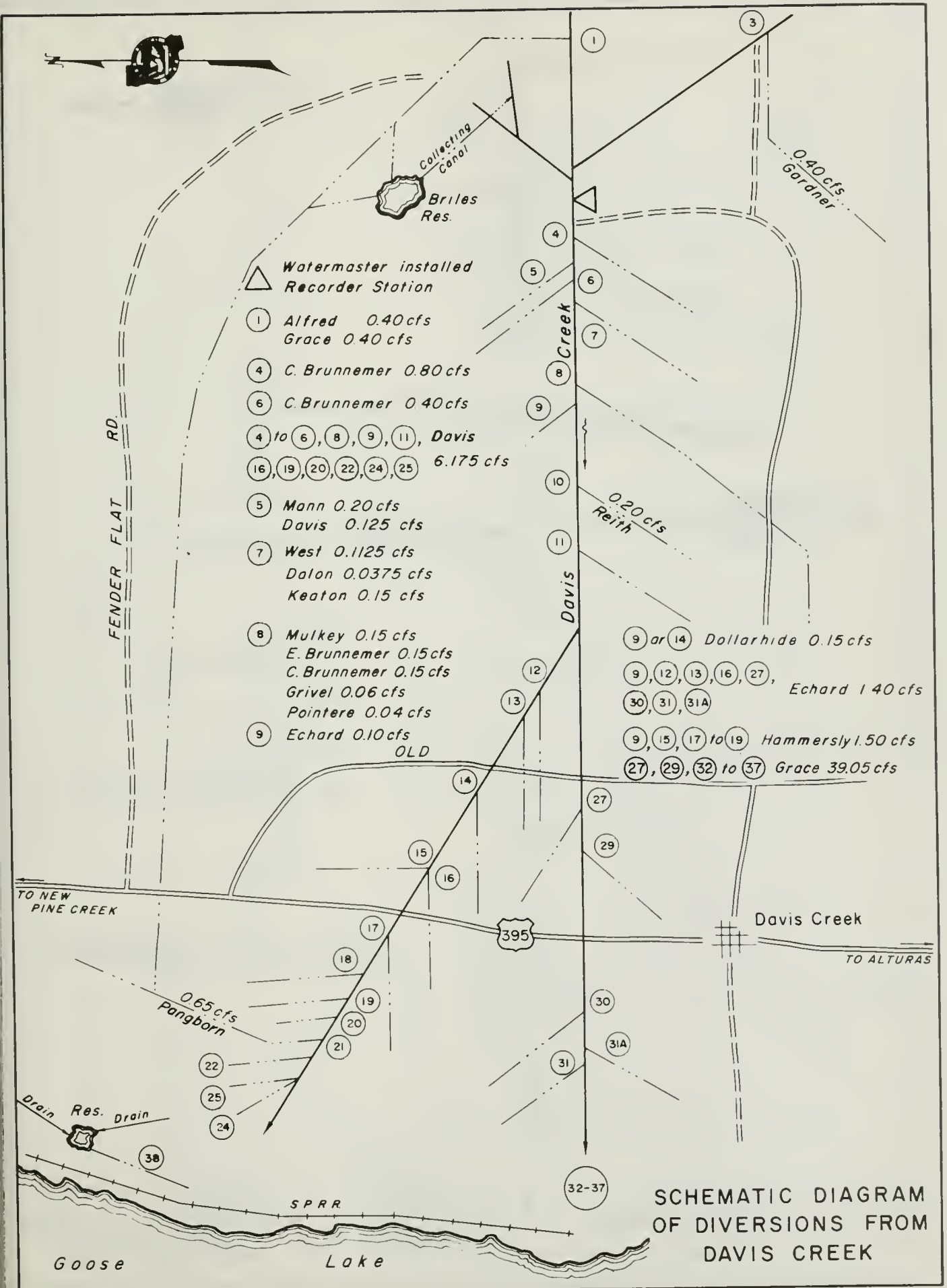
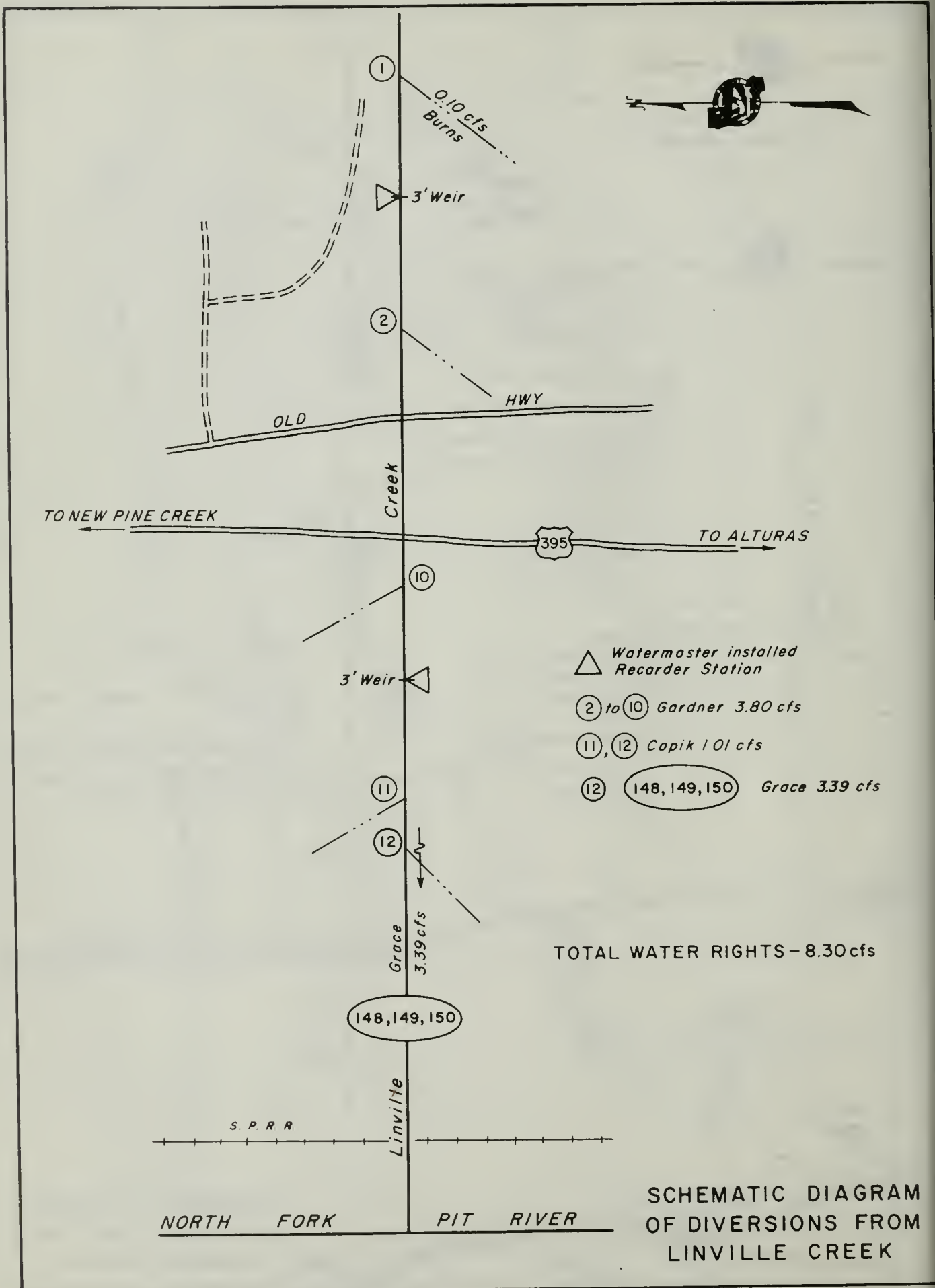

Allen (not used)
1
Watermaster installed Recorder Station
2
1.60 cfs
Allen
3
4.60 cfs
Fleming
4
4.10 cfs
Vincent (pipeline)
1.20 cfs
Perry
Creek
5
1.15 cfs
Fleming
NOTE: All diversions below (6) belong to Vincent and are used only during high flows early in the season.
6
1.60 cfs
U.R Ranch
1.10 cfs
Perry
Cottonwood
OLD
HWY.
TO NEW PINE CREEK
395
TO ALTURAS
TOTAL WATER RIGHTS–
15.35 cfs
S. P. R. R.
Goose Lake
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
COTTONWOOD CREEK

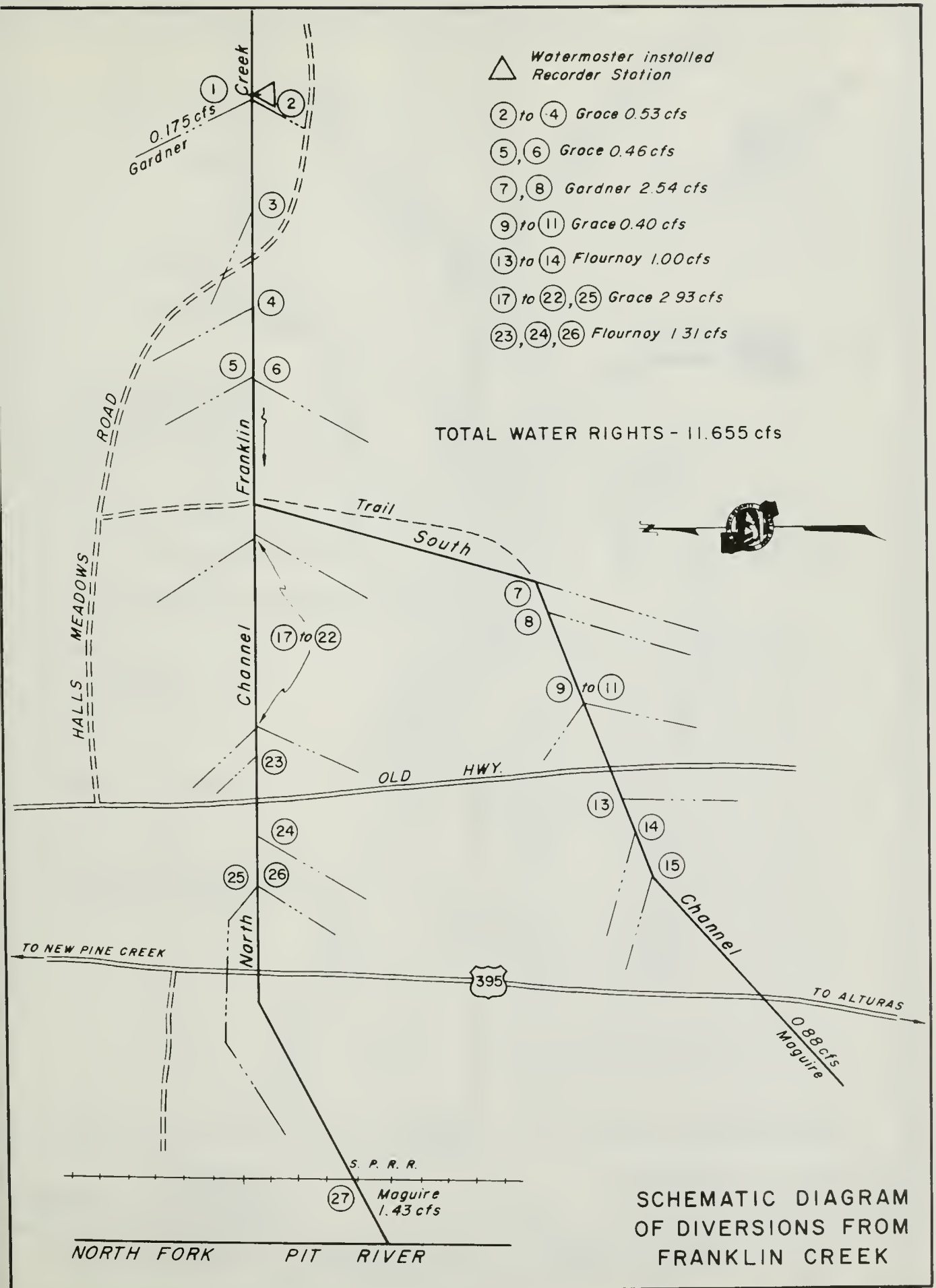
FIGURE 13c



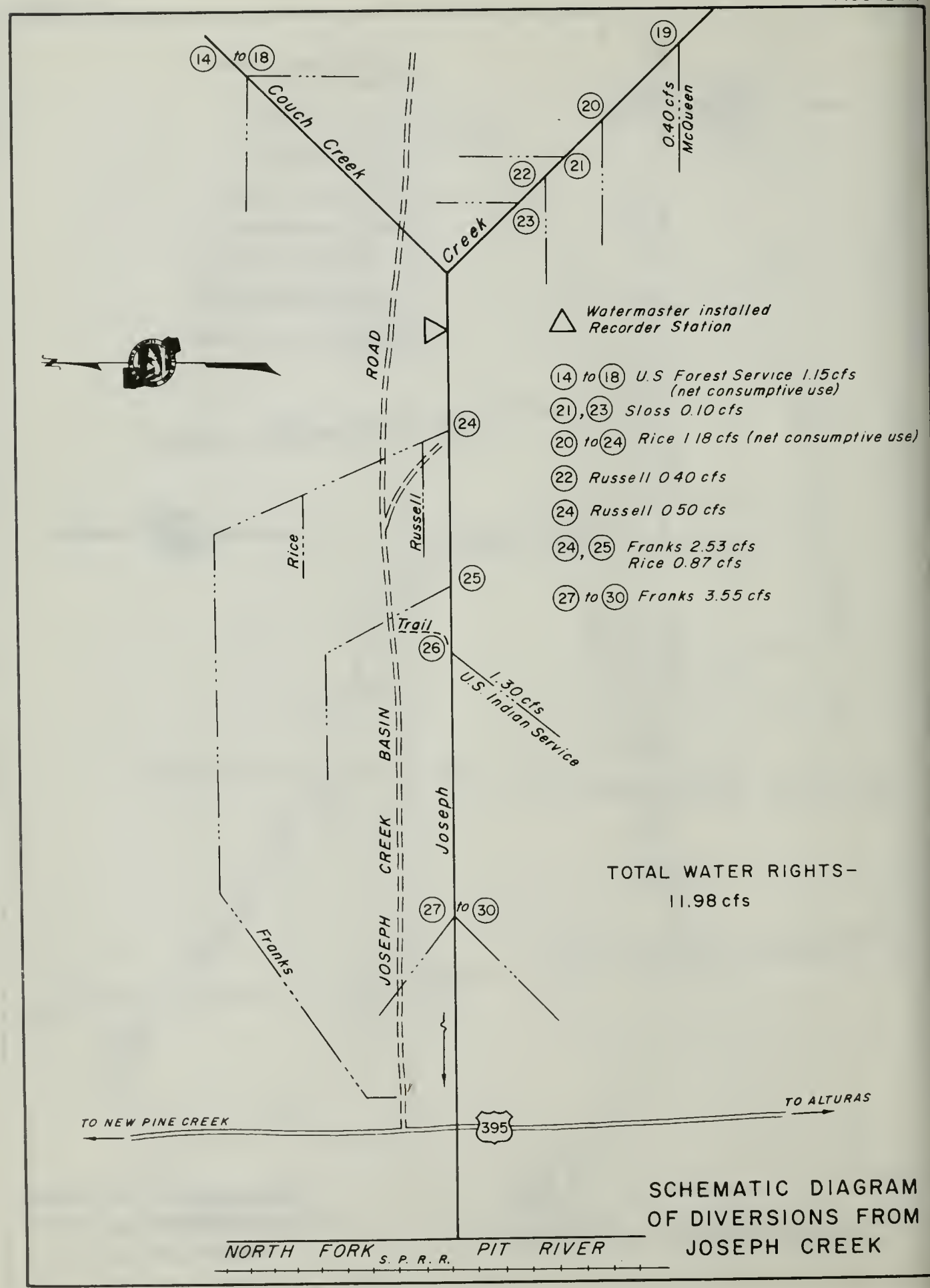
SCHEMATIC DIAGRAM OF DIVERSIONS FROM DAVIS CREEK

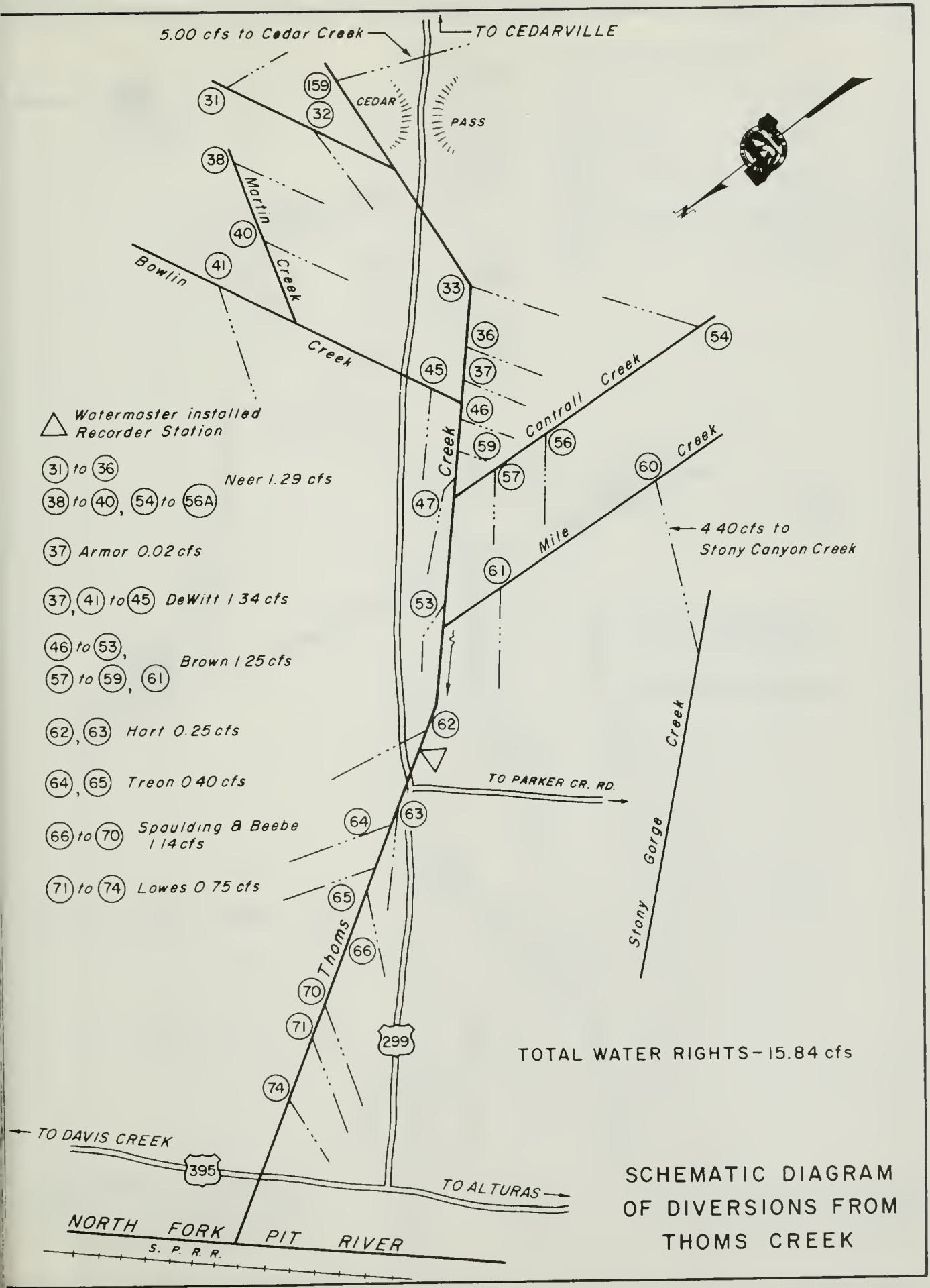


SCHEMATIC DIAGRAM OF DIVERSIONS FROM LINVILLE CREEK

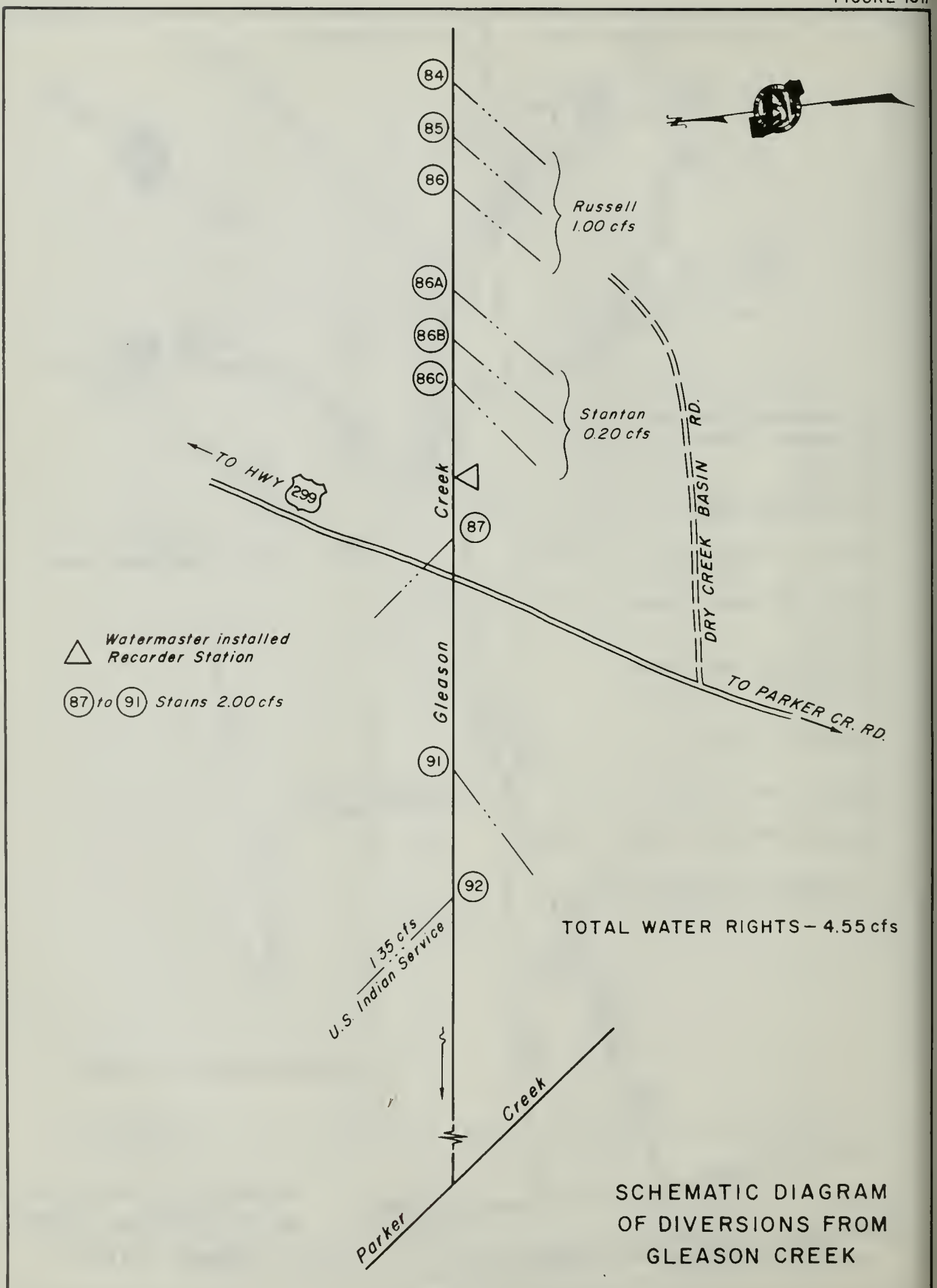


SCHEMATIC DIAGRAM OF DIVERSIONS FROM FRANKLIN CREEK


14 to 18
Couch Creek
19
20
0.40 cfs McQueen
22
21
23
Creek
ROAD
Watermaster installed Recorder Station
14 to 18 U.S Forest Service 1.15cfs (net consumptive use)
21, 23 Sloss 0.10 cfs
20 to 24 Rice 1 18 cfs (net consumptive use)
22 Russell 0 40 cfs
24 Russell 0 50 cfs
24, 25 Franks 2.53 cfs Rice 0.87 cfs
27 to 30 Fronks 3.55 cfs
24
Russell
Rice
25
Trail
26
1.30 cfs U.S Indian Service
BASIN
CREEK
Joseph
JOSEPH
TOTAL WATER RIGHTS-
11.98 cfs
27 to 30
Franks
TO ALTURAS
TO NEW PINE CREEK
395
NORTH FORK
S. P. R. R.
PIT RIVER
SCHEMATIC DIAGRAM OF DIVERSIONS FROM JOSEPH CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM THOMS CREEK



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
GLEASON CREEK

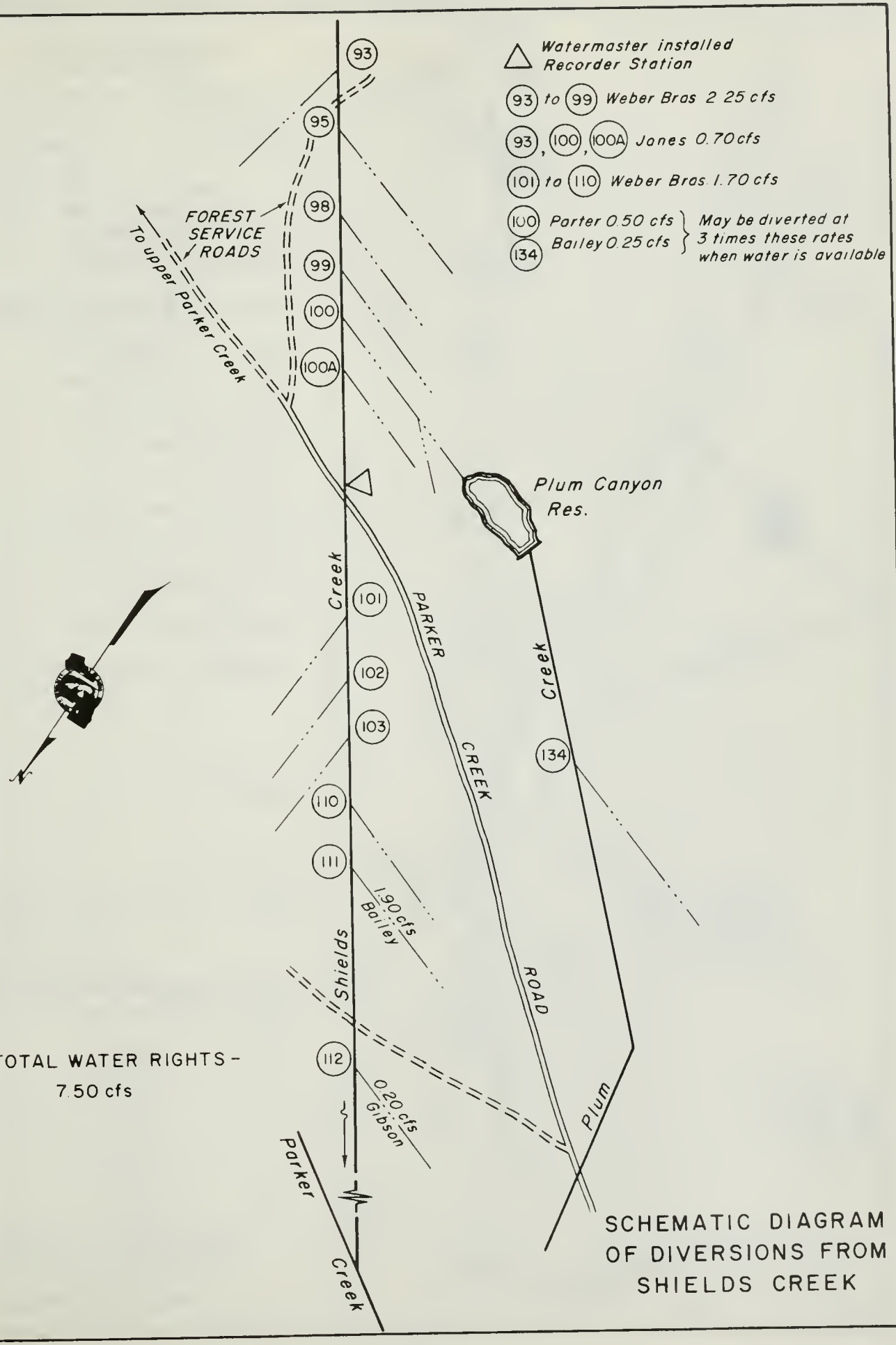
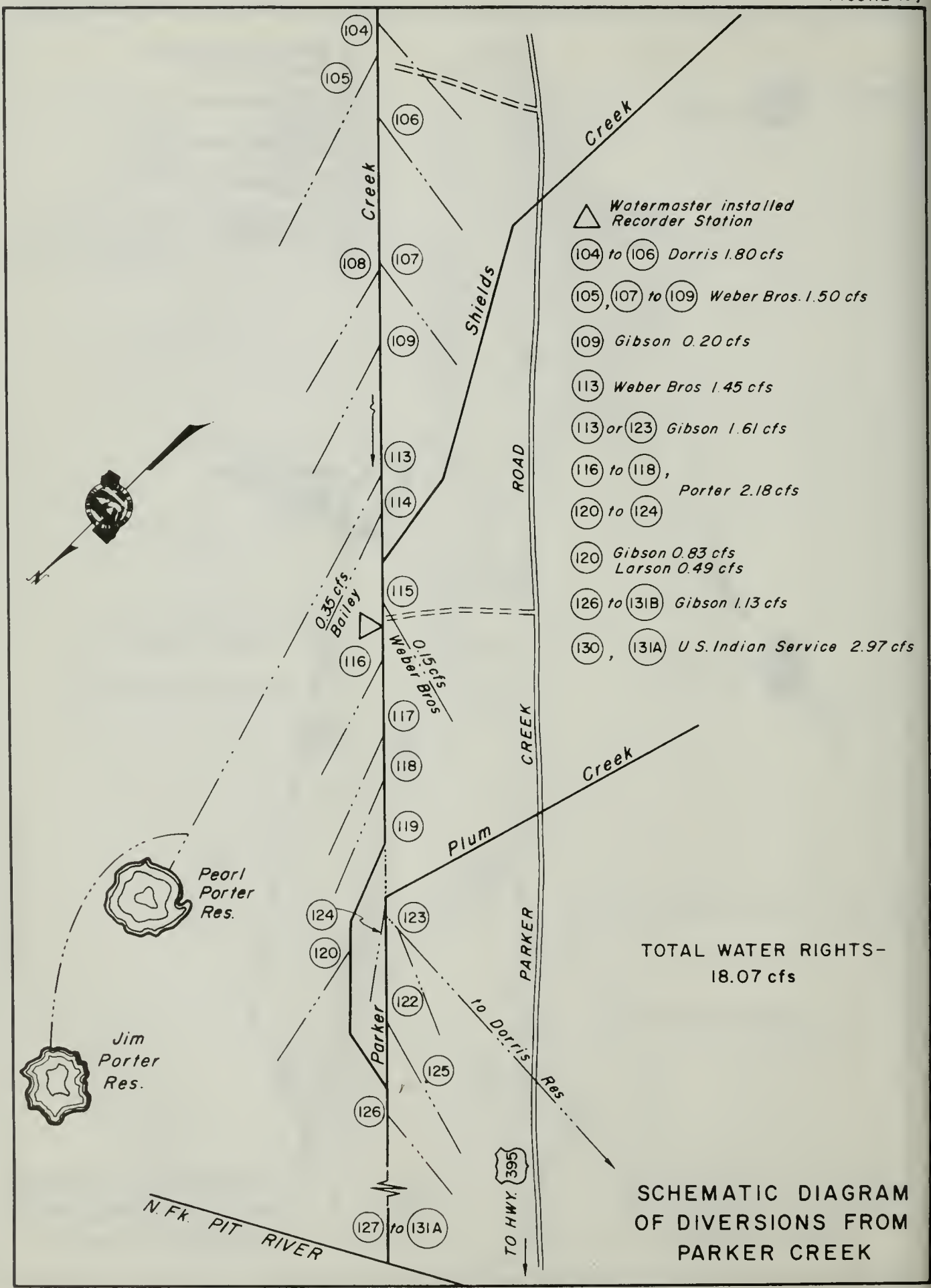
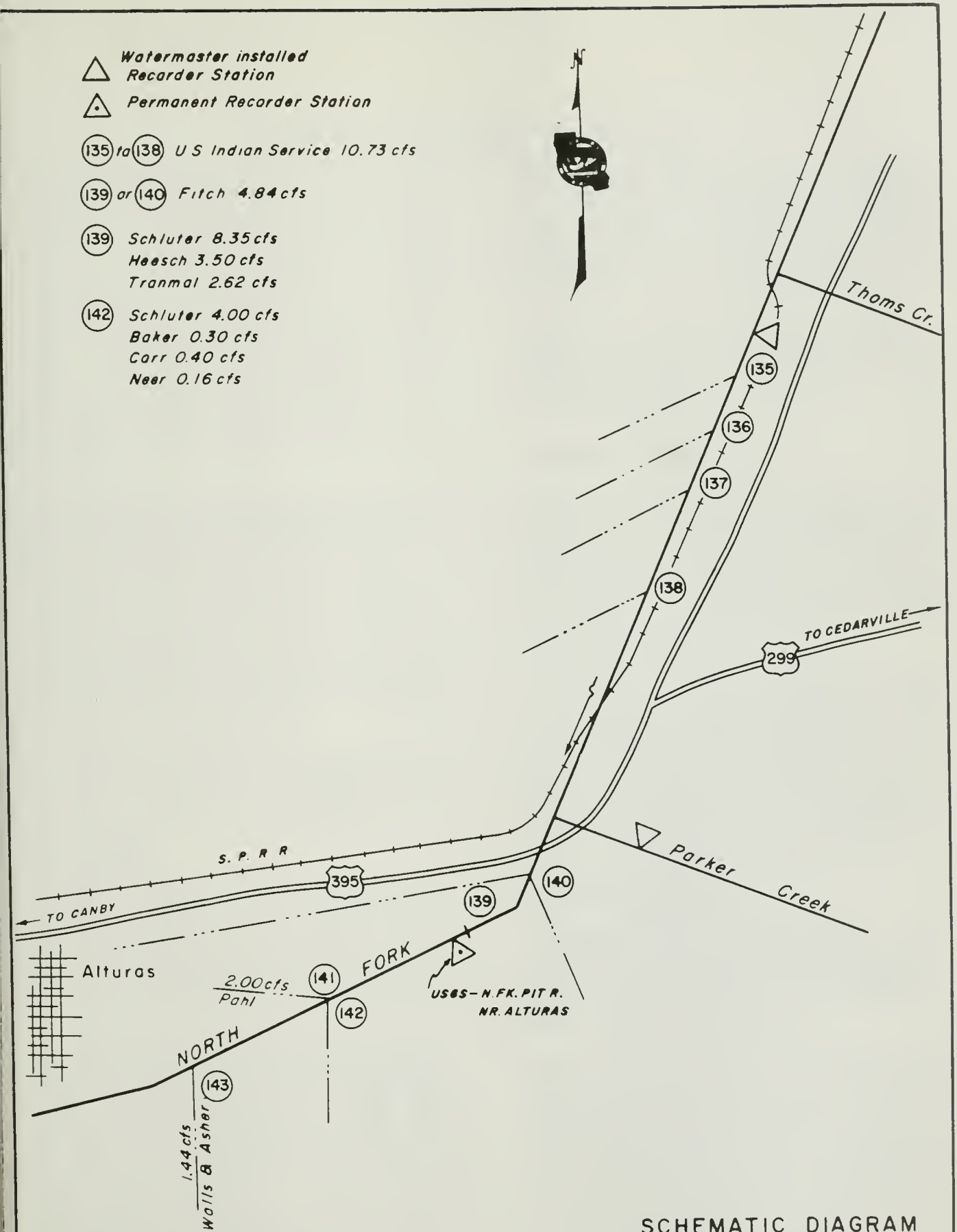

Watermaster installed Recorder Station
93 to 99 Weber Bros 2 25 cfs
93, 100, 100A Jones 0.70 cfs
101 to 110 Weber Bros. 1.70 cfs
100 Porter 0.50 cfs
134 Bailey 0.25 cfs
May be diverted at 3 times these rates when water is available
93
95
98
99
100
100A
FOREST SERVICE ROADS
To upper Parker Creek
Plum Canyon Res.
Creek
101
PARKER
CREEK
Creek
102
103
134
110
111
1.90 cfs Bailey
Shields
ROAD
112
0.20 cfs Gibson
Plum
Parker
Creek
TOTAL WATER RIGHTS - 7.50 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SHIELDS CREEK

FIGURE 13j


104
105
106
107
108
109
113
114
115
116
117
118
119
120
122
123
124
125
126
127 to 131A
Creek
Shields
ROAD
CREEK
PARKER
Plum
Creek
Parker
Creek
0.35 cfs Bailey
0.15 cfs Weber Bros
Peorl Porter Res.
Jim Porter Res.
10 Dorris Res.
N. Fk. PIT RIVER
TO HWY. 395
Watermaster installed Recorder Station
104 to 106 Dorris 1.80 cfs
105, 107 to 109 Weber Bros. 1.50 cfs
109 Gibson 0.20 cfs
113 Weber Bros 1.45 cfs
113 or 123 Gibson 1.61 cfs
116 to 118, 120 to 124 Porter 2.18 cfs
120 Gibson 0.83 cfs Larson 0.49 cfs
126 to 131B Gibson 1.13 cfs
130, 131A U S. Indian Service 2.97 cfs
TOTAL WATER RIGHTS- 18.07 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKER CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM NORTH FORK PIT RIVER

Shackleford Creek Watermaster Service Area

The Shackleford Creek service area is located in western Siskiyou County near the town of Fort Jones in Scott Valley. There are 41 water right owners in the service area with total allotments of 64.73 cubic feet per second. The major sources of water supply for this service area are Shackleford Creek, which flows through the central part of Quartz Valley, and its tributary, Mill Creek, which rises east of the headwaters of Shackleford Creek. Evans Creek, a small tributary to Mill Creek, enters from the south.

The service area encompasses the Quartz Valley region of Scott Valley and includes the entire agricultural area within the Shackleford Creek Basin. It is about two miles wide by six miles long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3,100 feet at the south to about 2,650 feet at the confluence of Shackleford Creek and Scott River.

A schematic drawing of the Shackleford Creek stream system is presented as Figures 14 and 14a, pages 88 and 89.

Water Supply

The water supply for Shackleford Creek is derived from snowmelt runoff, springs and seepage, and supplemental stored water released from Cliff Lake and Campbell Lake. These lakes are located near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system contains about 31 square miles, located in the heavily forested, steep, mountainous terrain of the northeasterly slopes of the Salmon Mountains. It varies in elevation from about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley. Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the first part of August when water is released from Cliff and Campbell Lakes to maintain sufficient flow for second priority allotments in the Shackleford Ditch.

There were no stream gaging stations operated in the Shackleford Creek service area during 1969. However, several stations were maintained in various diversion ditches.

Method of Distribution

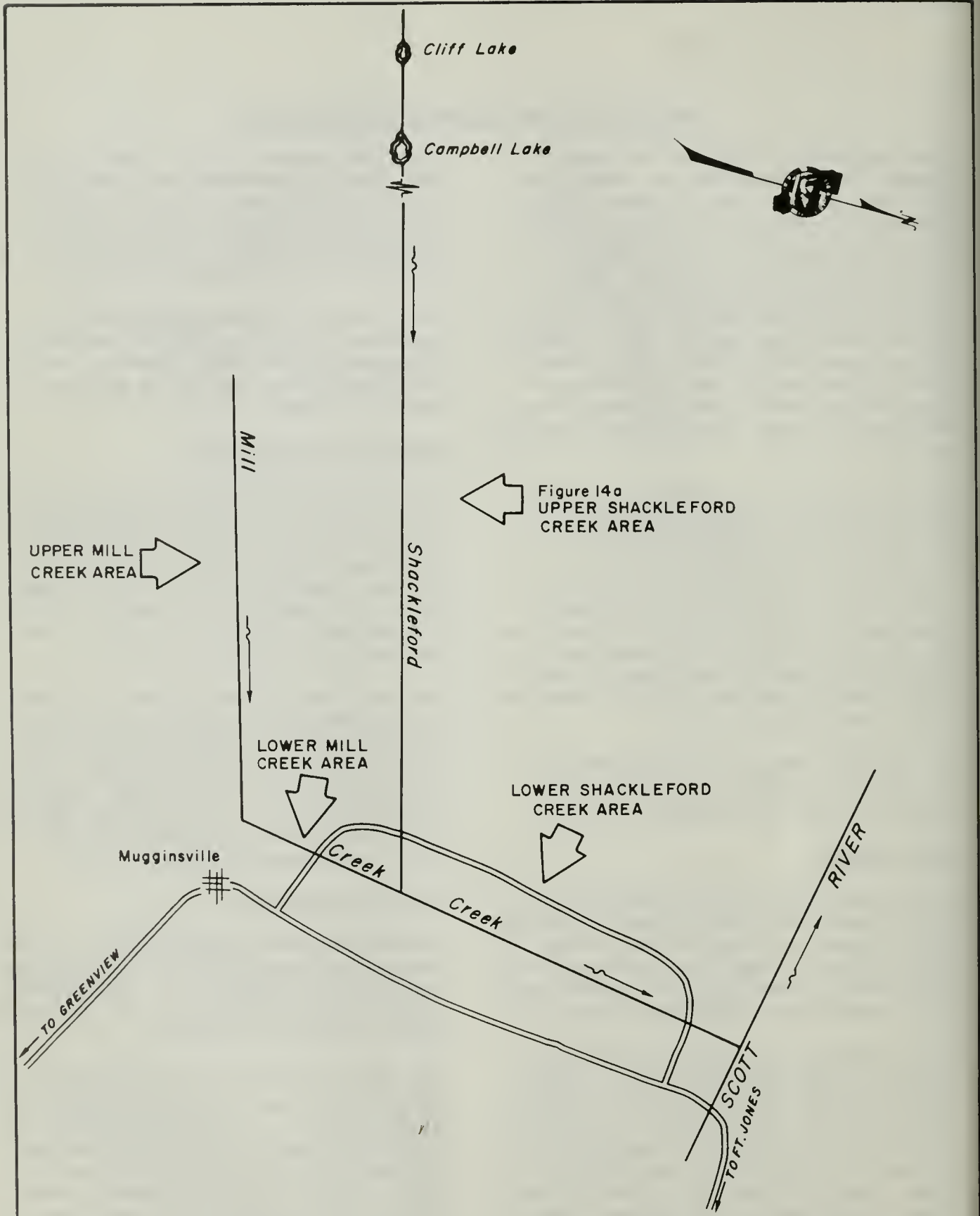
Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. Shackleford Ditch, the largest of these ditches, has a length of about 6 miles and a capacity of about 12 cubic feet per second.

The Shackleford Creek decree (see Table 1) provides four separate areas of distribution within the service area and establishes the following number of priority classes for these areas: Upper Shackleford Creek - seven; Lower Shackleford Creek - seven; Upper Mill Creek - three; and Lower Mill Creek - two.

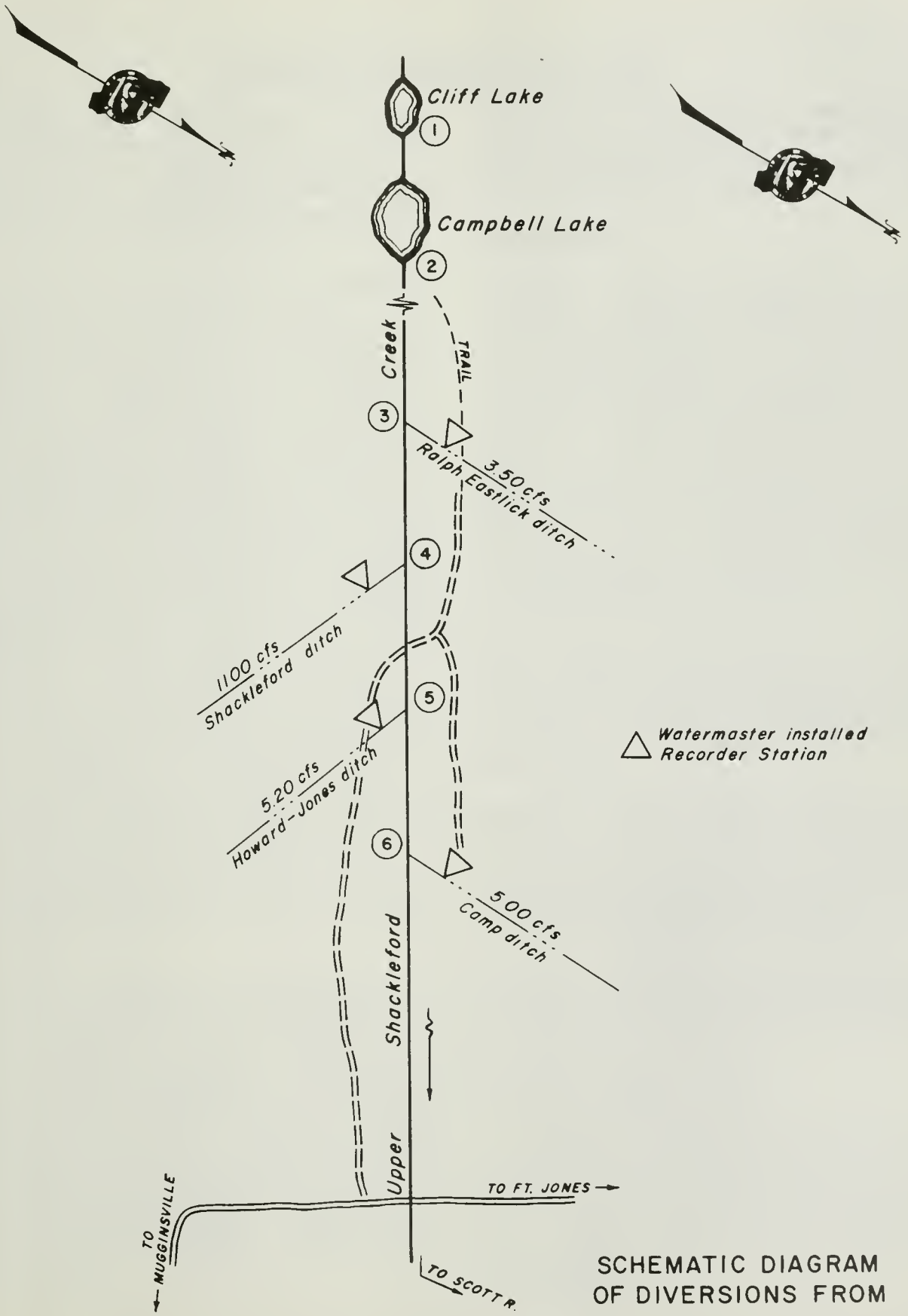
1969 Distribution

Watermaster service began June 1 in the Shackleford Creek service area and continued until September 30. John Nolan, Water Resources Technician II, was watermaster during this period.

The available water supply was above normal early in the season and about normal after August 1. Water right owners in the Howard-Jones Ditch did not use any of their water during the 1969 season. Their fourth priority allotment (seven priorities in the service area) were therefore available for use by owners of lower priorities.



SCHEMATIC DIAGRAM
OF SHACKLEFORD CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
UPPER SHACKLEFORD CREEK

Shasta River Watermaster Service Area

The Shasta River service area is located in the central part of Siskiyou County, south and east of the town of Yreka. There are 108 water right owners in the service area with total allotments of 594.612 cubic feet per second.

The source of water supply is Shasta River and its several tributaries. The upper reaches of the service area are served by two groups of tributaries. One group, comprising Boles, Beaughan, Carrick, and Jackson Creeks, rises on the northwestern slopes of Mount Shasta. The other group, consisting of Dale and Eddy Creeks, and Shasta River west of U. S. Highway 99, rises on the eastern slopes of the Trinity Mountains. All these streams join the main stem Shasta River above Dwinnell Reservoir near the town of Weed. As the Shasta River flows northward from Dwinnell Reservoir to its confluence with the Klamath River, north of Yreka, it is joined by three major tributaries. Parks Creek, rising on the eastern slopes of the Trinity Mountains, enters from the west near the town of Gazelle. Big Springs Creek, from Big Springs Lake, enters from the east about a mile below Parks Creek. Little Shasta River, rising on the western slopes of the mountainous area between Butte Valley and Shasta Valley, enters from the east near the town of Montague.

The place of use is in Shasta Valley which is approximately 30 miles long and 30 miles wide. The valley has numerous small, coneshaped, volcanic hillocks scattered throughout its central portion that produce the effect of dividing the area into a number of distinctively separate parts. Because of these formations only about 141,000 acres of the approximately 507,000 acres within the valley are irrigable. The valley floor elevation averages approximately 3,000 feet.

A schematic drawing of each major stream system within the Shasta River service area is presented as Figures 15 through 15i, pages 99 through 108.

Water Supply

The water supply for Shasta Valley is derived from snowmelt runoff, springs and underground flow, and occasional summer thundershowers. In several portions of the stream system the spring and underground flow is adequate to supply most allotments throughout the season. Much of the underground flow is derived from the northern slopes of Mount Shasta, which rises to an elevation of 14,162 feet at the south end of Shasta Valley. Although the snowpack on Mount Shasta is usually heavy, there is negligible surface runoff.

Parks Creek, Upper Shasta River, and Little Shasta River derive a major portion of their water supply from snowmelt runoff. This flow is usually adequate to supply all allotments until the middle of May.

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Dwinnell Reservoir, Big Springs, and Lower Shasta River have enough runoff from springs to supply a large percentage of the allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Shasta River service area are presented in Tables 31 through 37.

Methods of Distribution

Irrigation of permanent pasture and alfalfa lands is accomplished principally by wild flooding. Much of the return water is recaptured and used on lower pasture lands. Sprinkling systems are used for irrigating some alfalfa and grain lands.

Water is diverted primarily by diversion dams and then conveyed by ditch or canal to the place of use. The largest and longest canal in the area is the Edson-Foulke Yreka Ditch, which has a capacity of about 60 cubic feet per second and a length of about 15 miles. Water is also supplied into ditch systems by pumped diversions. The largest of these belong to three irrigation districts. Several riparian water right owners also use pump diversions.

Many privately owned storage reservoirs exist in the area. Water storage from these reservoirs is used to supplement continuous-flow allotments.

The Shasta River decree (see Table 1) provides eight separate areas of distribution within the service area. This decree established the following number of priority classes for these areas: Shasta River above the confluence with Big Springs Creek - 43; Jackson Creek - 7; Parks Creek - 25; Shasta River below the confluence with Big Springs Creek - 29; and Little Shasta River - 7.

Three privately operated water districts within the service area have main diversions which are under supervision of the watermaster. These are: Shasta River Water Users Association, Grenada Irrigation District, and Big Springs Irrigation District. A fourth, the Montague Water Conservation District, stores water in Dwinnell Reservoir for use by the District and by natural flow water right owners immediately below the dam. The watermaster is responsible for diversion to these users.

A number of riparian water users along the Lower Shasta River were not included in the Shasta River decree. Owners of these undefined water rights are therefore not subject to watermaster supervision; consequently, in seasons of short supply these rights can be the cause of many water distribution problems.

1969 Distribution

Watermaster service began April 1 in the Shasta River service area and continued through September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

The available water supply in the service area was generally above average during the season.

Parks Creek. The flow in Parks Creek was sufficient to supply all allotments (25 priorities) until mid-July. Some water continued to be diverted into the Yreka Ditch until late July. The first priority allotments of six cubic feet per second were available until August 1, after which first priority allotments were available in decreasing amounts for the remainder of the season. Water users downstream from the lowest first priority diversion received a portion of their allotments during the latter part of the season from return flow and from water rising in the gravel streambed.

Upper Shasta River. During early spring enough water was available to satisfy all allotments (eight priorities). As the flow decreased, the following levels of priority allotments were met: August 5 - all of fourth priority; August 12 - all of third priority (Yreka Ditch main allotment); and September 6 (the seasonal low) - 15 percent of third priority.

Shasta River from Boles Creek to Dwinnel Reservoir. Boles Creek and Shasta River from Boles Creek to Dwinnel Reservoir were operated as one stream, under a long-standing oral agreement among the water right owners, with water being distributed on an equal and correlative basis. Adequate water was available to satisfy all allotments until the middle of August. All diversions were then cut to 70 percent. In mid-September the flow increased to again allow diversion of 100 percent of allotments.

Beaghan Creek. The flow of Beaughan Creek was sufficient to satisfy most demands (five priorities) for the entire season. The creek is routed through a mill pond owned by the International Paper Company which uses approximately 35 percent of the flow for industrial purposes.

Carrick Creek. The water supply in Carrick Creek was adequate to satisfy all allotments (13 priorities) during the entire irrigation season.

Little Shasta River. Enough water was available in Little Shasta River to satisfy all fifth priority allotments (seven priorities) until late June. After that date, close regulation became necessary to adequately distribute this priority. The flow continued to decrease to approximately 10 percent of the fourth priority allotments by the end of August. It then stayed constant for the remainder of the season.

The daily mean discharge of Little Shasta River near Montague is presented in Table 36, page 98. This runoff is augmented by rising water along the river channel, and by substantial inflow from Cleland Springs, a tributary approximately two miles below the stream gaging station. Therefore, considerably more water is available for distribution at downstream diversion points than is indicated in the discharge table.

Dwinnell Reservoir. Releases from Dwinnell Reservoir to Montague Water Conservation District commenced on April 14 and continued into October. Reservoir operation data from the 1969 season are shown in Tables 33 and 34, pages 96 and 97.

By agreement with Montague Water Conservation District, water users on Shasta River below Dwinnell Reservoir received stored water from the reservoir on demand in lieu of their natural flow rights. The agreement allotment totals and the amount delivered to each user this season are shown in the tabulation below.

DELIVERIES TO NATURAL FLOW WATER RIGHT OWNERS
BELOW DWINNELL RESERVOIR - 1969

Name of Water Right Owner	Allotment in Acre-feet	Allotment Delivered from Dwinnell Reservoir	
		Acre-feet	% of Allotment
Flying 'L' Ranch	198	12	6
Frank Ayers	464	0	0
J. N. Taylor	1,200	1,200	100
W. W. Valentine			
Hole-in-the Ground Ranch	596	0	0
Seldom Seen Ranch	924	0	0
Totals	3,382	1,212	36

Big Springs. The flow of Big Springs was sufficient to satisfy approximately 50 percent of third priority allotments through the first half of the season. Usually during July, August, and September, the flow in Big Springs increases as snowmelt from higher elevations on Mount Shasta percolates into the ground and reappears as surface flow at Big Springs Lake. As a result, Big Springs Irrigation District, a third priority water right owner, was able to pump its full allotment from late July through the remainder of the season.

Lower Shasta River. The water supply in Lower Shasta River was sufficient to satisfy all allotments (29 priorities) for the entire season.

SHASTA RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 31

SHASTA RIVER AT EDGEWOOD

Day	March	April	May	June	July	August	September	Day
1	106	170	118	140	61	16	6.8	1
2	104	164	106	136	60	16	6.8	2
3	98	150	95	140	57	15	6.8	3
4	92	136	89	147	45	14	5.8	4
5	92	216	90	145	44	14	5.8	5
6	93	156	109	136	42	13	5.3	6
7	82	130	144	122	41	12	5.8	7
8	79	117	170	116	38	11	6.8	8
9	75	117	240	110	35	10	6.8	9
10	72	110	246	112	33	11	8.8	10
11	72	113	288	116	28	12	8.8	11
12	70	132	292	101	27	8.8	8.8	12
13	70	131	315	98	27	6.8	10	13
14	70	128	270	93	26	5.8	12	14
15	92	113	212	91	26	5.3	12	15
16	104	110	200	86	25	5.8	13	16
17	117	120	214	84	24	5.3	14	17
18	100	132	240	81	25	5.3	15	18
19	91	131	198	82	25	5.3	17	19
20	89	136	160	80	24	5.3	18	20
21	90	156	158	73	22	5.8	19	21
22	93	198	160	70	22	5.8	21	22
23	93	240	182	70	22	5.8	22	23
24	92	181	202	69	22	5.3	22	24
25	93	148	195	70	22	5.3	22	25
26	103	122	184	72	21	5.8	23	26
27	117	113	161	69	21	8.4	24	27
28	140	121	144	70	19	5.8	24	28
29	173	135	140	65	18	5.8	25	29
30	210	122	149	62	17	8.8	25	30
31	202		149		17	10		31
Mean	102	142	181	96.8	30.2	8.7	14.0	Mean
Runoff In Acre-Feet	6300	8430	11150	5760	1860	536	835	Runoff In Acre-Feet

TABLE 32

PARKS CREEK ABOVE EOSON-FOULKE YREKA DITCH

Day	March	April	May	June	July	August	September	Day
1				141	38	5.9	3.6	1
2				143	36	5.8	3.7	2
3				140	33	5.8	3.7	3
4				141	30	5.5	3.7	4
5				136	28	5.4	3.6	5
6				136	27	5.3	3.6	6
7				135	25	5.3	3.6	7
8				121	23	5.2	3.6	8
9			76*	110	21	5.1	3.6	9
10			105	94	21	5.1	3.6	10
11			83	110	22	4.9	3.6	11
12			64	83	22	4.9	3.6	12
13			61	79	21	4.9	3.6	13
14			67	73	19	4.9	3.6	14
15			97	71	17	4.7	3.6	15
16			113	69	16	4.7	3.6	16
17			129	67	13	4.6	3.6	17
18			136	66	11	4.6	3.6	18
19			141	65	9.9	4.6	3.6	19
20			141	65	9.7	4.3	3.6	20
21			140	68	9.7	4.1	3.7	21
22			137	65	9.7	4.1	3.7	22
23			135	64	9.3	4.0	3.8	23
24			128	61	9.1	4.0	3.8	24
25			134	57	8.6	4.0	3.9	25
26			125	53	7.9	3.9	4.0	26
27			110	51	7.5	3.9	4.0	27
28			113	48	7.3	3.9	4.0	28
29			117	44	6.9	3.8	4.0	29
30			110	40	6.6	3.7	4.0	30
31			111		6.0	3.6		31
Mean			112	86.5	17.1	4.7	3.7	Mean
Runoff In Acre-Feet			5100	5150	1050	287	220	Runoff In Acre-Feet

* Beginning of Record

SHASTA RIVER WATERMASTER SERVICE AREA
October 1, 1968 through September 30, 1969 (in acre-feet)

TABLE 33
DAILY MEAN STORAGE IN DWINNELL RESERVOIR

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Day
1	4,970	5,040	7,930	14,210	26,750	35,080	39,640	44,460	48,490	44,440	33,990	25,300	1
2	4,900	5,110	8,010	14,460	26,900	35,300	39,960	44,540	48,460	44,200	33,740	25,060	2
3	4,820	5,200	8,060	14,650	27,050	35,520	40,330	44,640	48,420	43,810	33,400	24,820	3
4	4,750	5,290	8,130	14,850	27,200	35,620	40,550	44,760	48,400	43,680	33,060	24,620	4
5	4,700	5,360	8,220	15,060	27,350	35,810	41,030	44,890	48,290	43,200	32,690	24,430	5
6	4,600	5,430	8,300	15,240	27,530	35,910	41,400	45,060	48,220	42,830	32,420	24,200	6
7	4,540	5,500	8,420	15,390	27,650	35,960	41,660	45,230	48,160	42,490	32,110	23,980	7
8	4,480	5,570	8,500	15,620	27,880	36,060	41,820	45,480	48,140	42,120	31,840	23,760	8
9	4,440	5,620	8,620	15,780	28,180	36,200	41,980	45,640	48,110	41,810	31,550	23,570	9
10	4,380	5,730	9,100	15,900	28,580	36,250	42,140	45,800	48,090	41,490	31,260	23,390	10
11	4,400	5,820	9,850	16,100	29,760	36,280	42,250	45,980	48,070	41,130	30,940	23,180	11
12	4,400	6,000	10,080	16,640	30,910	36,340	42,370	46,210	48,070	40,760	30,660	23,010	12
13	4,400	6,140	10,400	18,460	31,440	36,400	42,520	46,560	47,920	40,450	30,430	22,830	13
14	4,420	6,290	10,460	19,400	31,840	36,440	42,590	46,820	47,790	40,110	30,180	22,650	14
15	4,440	6,340	11,500	19,820	32,100	36,490	42,660	47,100	47,680	39,770	29,870	22,440	15
16	4,460	6,470	12,240	20,070	32,400	36,610	42,660	47,280	47,440	39,400	29,600	22,230	16
17	4,470	6,580	12,520	20,170	32,610	36,710	42,670	47,460	47,260	39,000	29,380	22,000	17
18	4,490	6,720	12,670	20,320	32,970	36,880	42,740	47,640	47,030	38,660	29,080	21,820	18
19	4,520	6,820	12,800	20,560	33,190	37,040	42,800	47,820	46,960	38,440	28,920	21,640	19
20	4,550	6,930	12,920	21,220	33,400	37,140	42,860	47,930	46,840	38,000	28,520	21,470	20
21	4,590	7,030	13,020	22,310	33,560	37,220	42,960	47,950	46,710	37,660	28,190	21,330	21
22	4,620	7,140	13,240	23,040	33,740	37,320	43,120	47,970	46,510	37,320	27,950	21,190	22
23	4,650	7,230	13,380	23,530	33,900	37,420	43,500	48,000	46,280	36,980	27,650	21,080	23
24	4,680	7,320	13,380	23,930	34,080	37,520	43,970	48,130	46,060	36,710	27,350	20,970	24
25	4,700	7,440	13,430	24,920	34,240	37,610	44,170	48,260	45,840	36,370	27,050	20,860	25
26	4,720	7,520	13,600	25,430	34,420	37,730	44,240	48,400	45,630	36,030	26,820	20,730	26
27	4,740	7,600	13,800	25,940	34,580	37,830	44,260	48,540	45,410	35,690	26,520	20,600	27
28	4,760	7,680	13,860	26,240	34,720	38,000	44,280	48,540	45,220	35,350	26,220	20,480	28
29	4,800	7,780	13,920	26,500		38,240	44,350	48,520	45,000	35,010	26,000	20,320	29
30	4,830	7,840	14,040	26,570		38,660	44,400	48,510	44,740	34,670	25,750	20,210	30
31	4,920		14,140	26,570		39,220		48,510		34,330	25,500		31

SHASTA RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 34

OWINNELL RESERVOIR

Day	April	May	June	July	August	September	October	Day
1		42	71	60	84	73	34	1
2		42	71	61	84	67	35	2
3		42	75	63	84	67	36	3
4		42	75	67	84	62	36	4
5		42	75	70	83	58	35	5
6		50	70	74	77	61	34	6
7		63	67	77	80	67	29	7
8		71	59	83	81	64	16	8
9		73	56	86	84	59	6.8**	9
10		74	45	90	90	58		10
11		74	35	92	101	56		11
12		75	39	92	115	54		12
13		75	40	92	108	54		13
14	41*	73	41	89	93	55		14
15	47	73	41	86	89	59		15
16	47	76	61	86	79	60		16
17	47	75	62	85	77	60		17
18	47	75	64	84	79	59		18
19	47	76	66	84	78	55		19
20	47	76	61	84	81	55		20
21	50	73	51	84	81	51		21
22	54	71	51	84	81	44		22
23	53	71	51	85	81	38		23
24	47	71	51	87	81	35		24
25	42	71	48	87	81	32		25
26	42	64	51	86	81	30		26
27	42	64	54	86	81	30		27
28	42	71	54	86	86	32		28
29	42	71	54	85	83	36		29
30	42	71	54	85	77	35		30
31		71		84	75			31
Mean	43.3	66.4	56.4	82.1	84.5	52.2	29.1	Mean
Runoff In Acre-Feet	1550	4080	3360	5050	5190	3110	519	Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 35

LITTLE SHASTA RIVER NEAR MONTAGUE

Day	March	April	May	June	July	August	September	Day
1	11	106	73	45	13	6.6	5.0	1
2	11	90	71	41	13	6.6	5.0	2
3	12	70	65	39	13	6.6	5.0	3
4	10	60	62	38	12	6.3	5.0	4
5	11	71	68	37	12	6.3	5.0	5
6	12	66	76	32	12	6.3	4.7	6
7	11	61	83	29	11	6.3	4.7	7
8	11	59	89	29	11	6.0	4.7	8
9	12	58	92	29	11	6.0	4.7	9
10	11	60	94	29	11	5.6	4.7	10
11	11	72	95	29	10	5.6	4.7	11
12	11	83	95	26	9.9	5.6	4.7	12
13	11	69	94	25	9.5	5.6	4.7	13
14	12	66	90	23	9.5	5.6	4.7	14
15	18	62	84	23	9.5	5.6	4.4	15
16	30	71	80	21	9.0	5.6	4.7	16
17	41	90	78	20	8.5	5.3	4.4	17
18	38	98	80	20	8.5	5.3	5.0	18
19	29	95	76	23	8.1	5.3	5.3	19
20	29	100	73	21	8.1	5.3	5.6	20
21	32	104	70	18	7.6	5.3	5.3	21
22	49	102	68	18	7.3	5.3	5.0	22
23	54	92	67	18	8.1	5.3	4.7	23
24	51	78	66	18	8.5	5.0	4.7	24
25	56	71	64	16	8.1	5.0	4.4	25
26	71	68	65	16	7.6	5.0	4.4	26
27	83	71	64	16	7.3	5.0	3.8	27
28	94	80	57	16	6.9	5.3	3.8	28
29	106	82	52	14	6.9	5.3	4.4	29
30	121	75	49	14	6.9	5.3	4.7	30
31	118		47		6.6	5.0		31
Mean	38.0	77.1	73.8	24.8	9.4	5.6	4.7	Mean
Runoff In Acre-Feet	2340	4620	4540	1474	578	346	281	Runoff In Acre-Feet

SHASTA RIVER WATERMASTER SERVICE AREA

1968 Daily Mean Discharge in Cubic Feet Per Second

TABLE 38

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

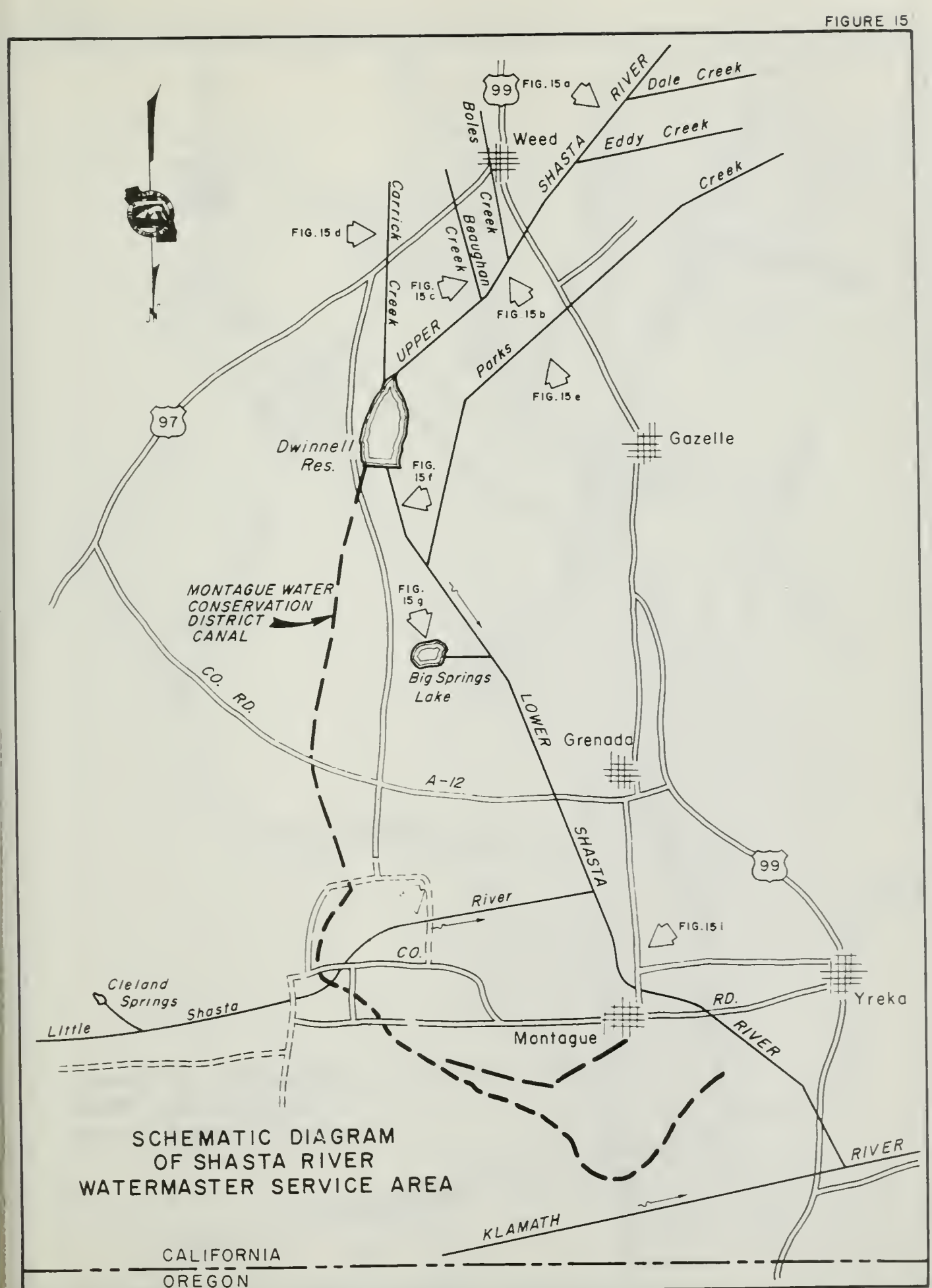
Day	March	April	May	June	July	August	September	Day
1				59	108	37	73	1
2				55	67	33	71	2
3				42	53	31	85	3
4				48	58	30	80	4
5				82	43	21	55	5
6				85	37	16	59	6
7				57	40	19	60	7
8				81	35	17	55	8
9			109*	79	39	17	34	9
10			113	112	37	21	21	10
11			145	126	27	17	16	11
12			170	159	27	14	14	12
13			218	129	29	26	18	13
14			175	98	24	21	17	14
15			162	87	27	17	17	15
16			137	81	24	14	14	16
17			123	74	33	13	35	17
18			123	87	38	17	54	18
19			136	218	38	19	53	19
20			136	178	24	24	68	20
21			139	182	27	29	91	21
22			114	108	27	28	98	22
23			108	105	32	24	108	23
24			129	112	129	25	126	24
25			132	117	278	26	117	25
26			145	123	172	26	87	26
27			149	139	112	28	84	27
28			96	150	94	28	87	28
29			69	184	94	24	103	29
30			84	137	78	26	87	30
31			75		42	37		31
Mean			130	107	61.0	23.4	61.6	Mean
Runoff In Acre-Feet			5920	6370	3750	1440	3660	Runoff In Acre-Feet

* Beginning of Record

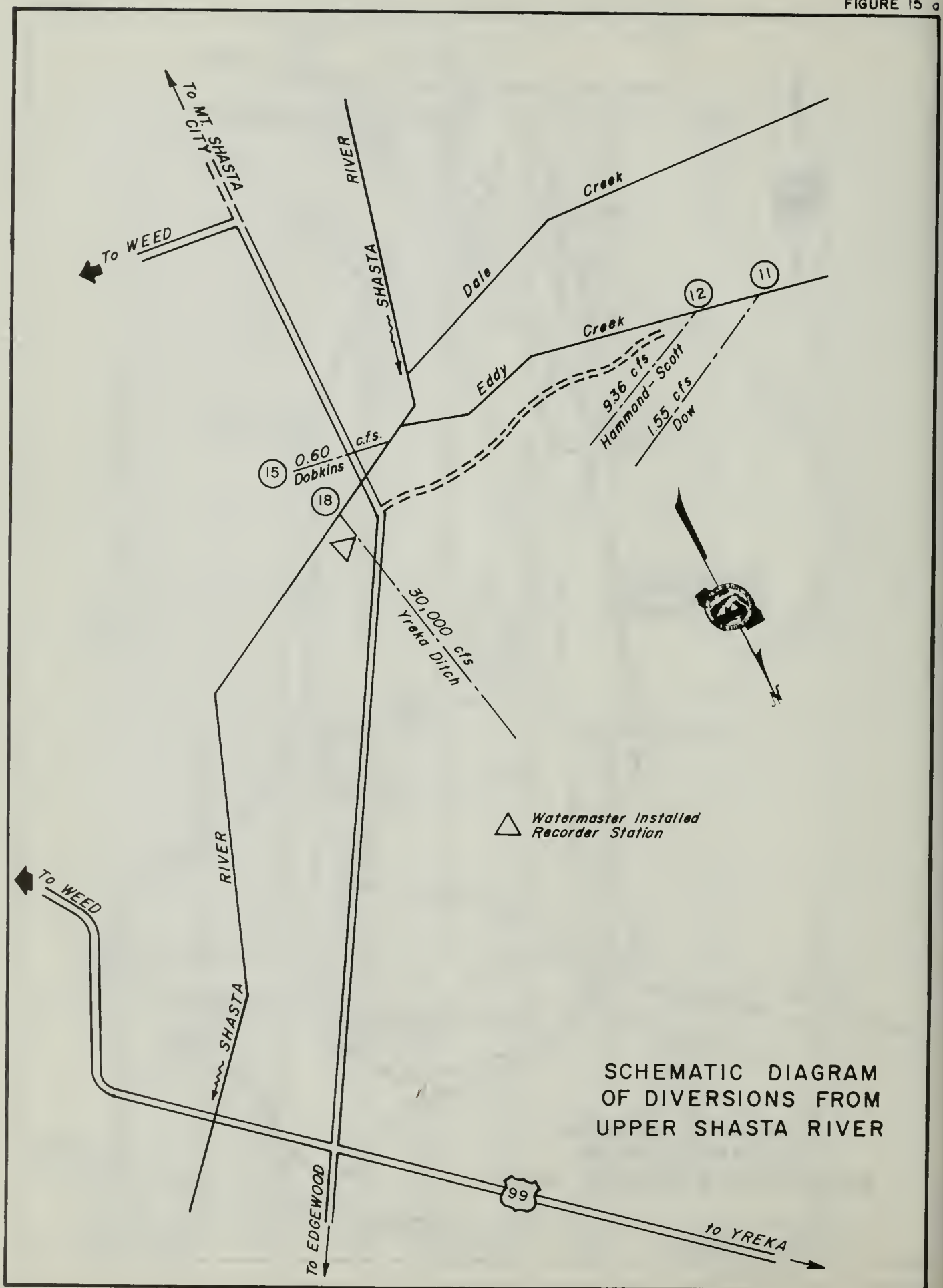
TABLE 37

SHASTA RIVER NEAR YREKA

Day	March	April	May	June	July	August	September	Day
1	397	348	171	63	139	58	66	1
2	392	299	164	61	95	53	80	2
3	334	285	148	50	79	40	73	3
4	295	266	130	50	79	36	68	4
5	268	300	125	98	77	36	74	5
6	255	366	122	84	61	33	71	6
7	247	340	106	70	65	31	72	7
8	241	303	105	76	60	32	76	8
9	235	247	97	88	49	19	66	9
10	231	199	97	153	61	29	56	10
11	228	177	117	150	47	27	44	11
12	223	172	127	182	39	25	45	12
13	218	160	195	149	39	21	49	13
14	216	153	159	121	41	36	58	14
15	216	188	157	120	38	37	55	15
16	217	177	134	107	38	24	49	16
17	221	169	122	90	40	20	54	17
18	234	177	117	96	49	16	74	18
19	229	178	122	197	52	25	72	19
20	225	153	129	204	44	34	81	20
21	225	172	133	174	40	36	105	21
22	217	179	112	143	40	41	111	22
23	220	183	104	131	33	37	117	23
24	230	248	106	139	80	38	127	24
25	223	271	118	151	214	27	129	25
26	227	214	130	150	189	35	111	26
27	234	200	133	156	121	39	93	27
28	269	205	104	187	97	44	104	28
29	283	197	74	196	97	38	124	29
30	299	196	68	166	84	41	116	30
31	333		74		62	45		31
Mean	254	224	123	127	72.5	34.0	80.7	Mean
Runoff In Acre-Feet	15630	13330	7540	7540	4460	2090	4800	Runoff In Acre-Feet

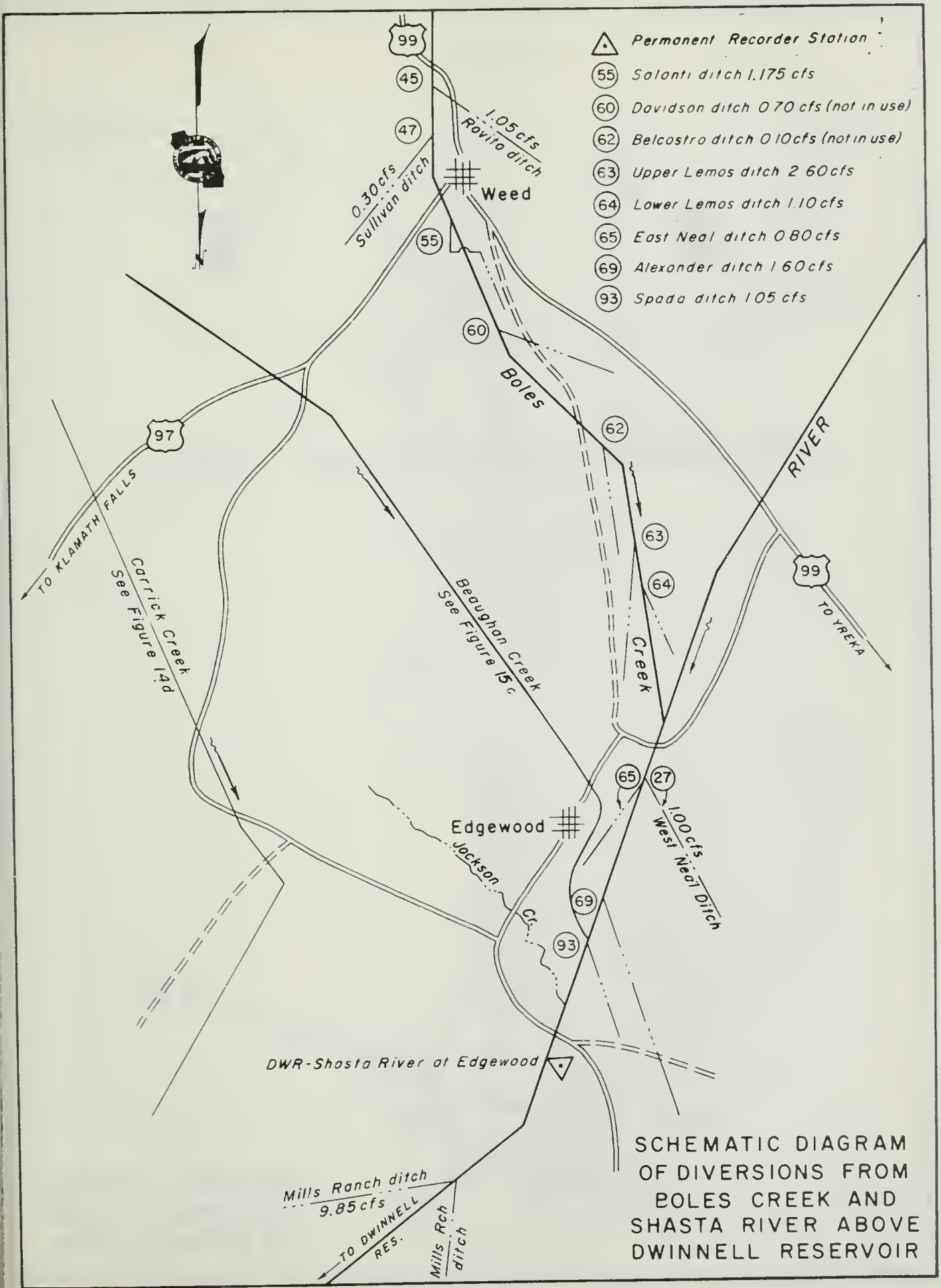


SCHEMATIC DIAGRAM
OF SHASTA RIVER
WATERMASTER SERVICE AREA

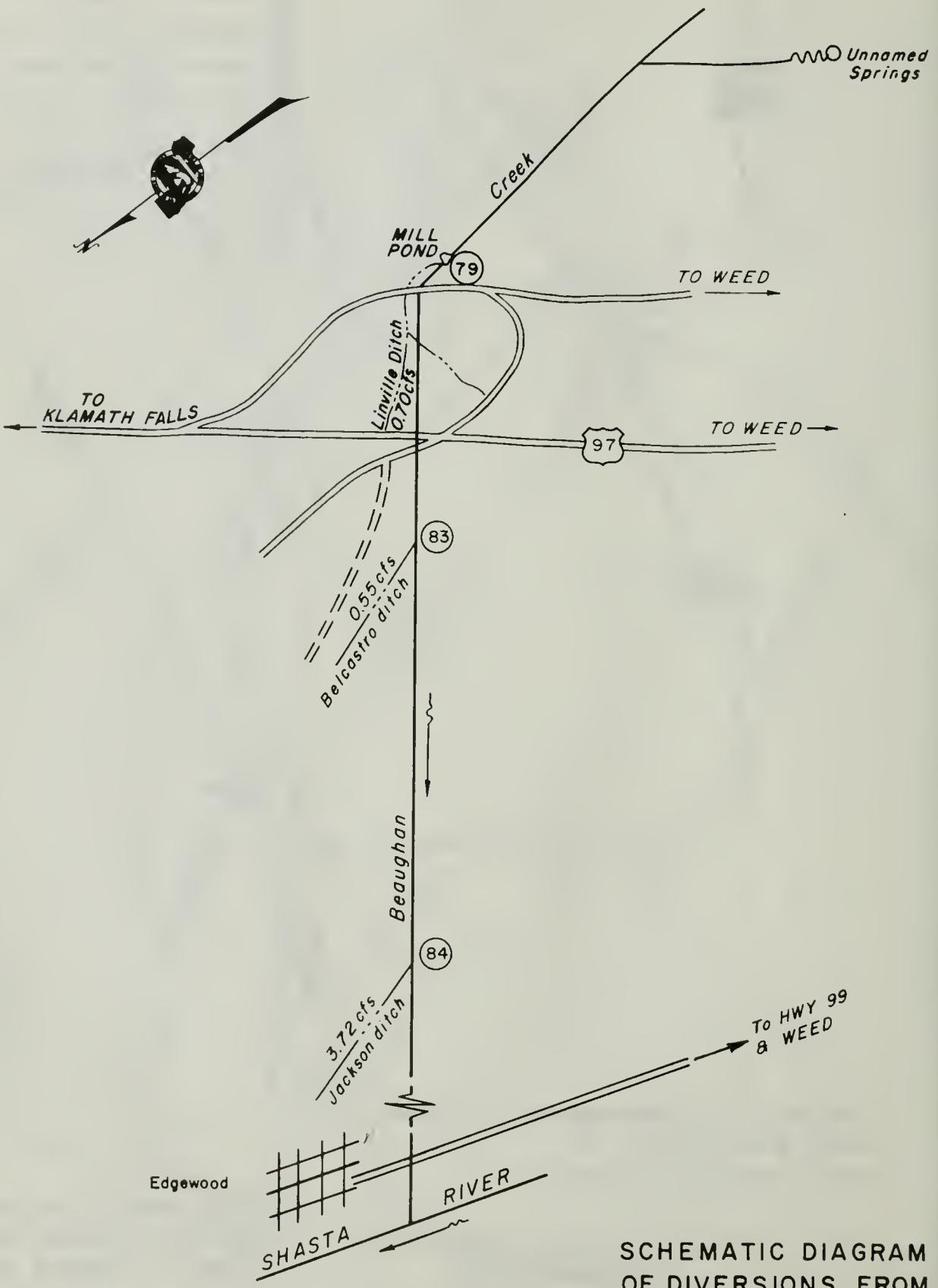


SCHEMATIC DIAGRAM OF DIVERSIONS FROM UPPER SHASTA RIVER

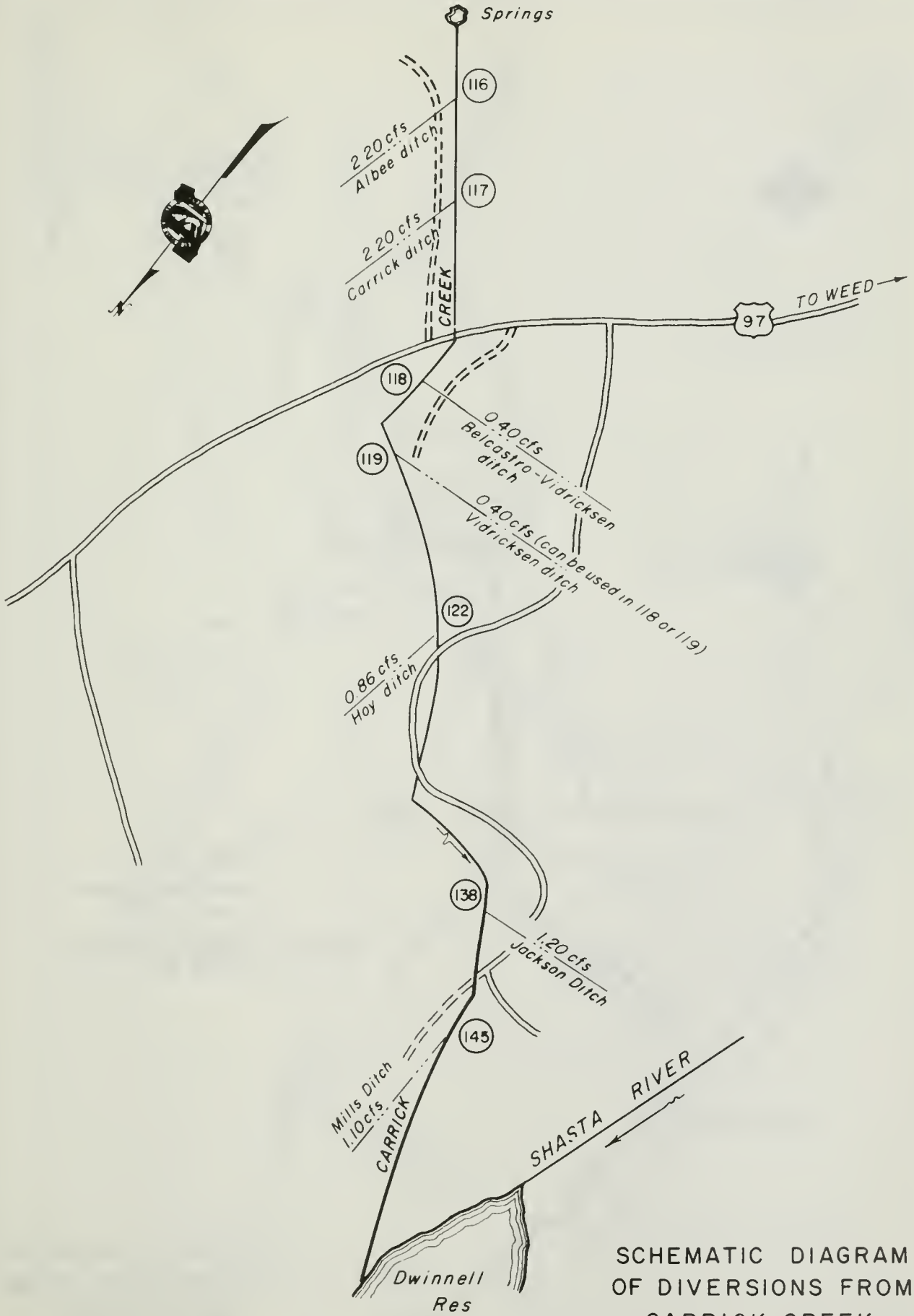
FIGURE 15 b



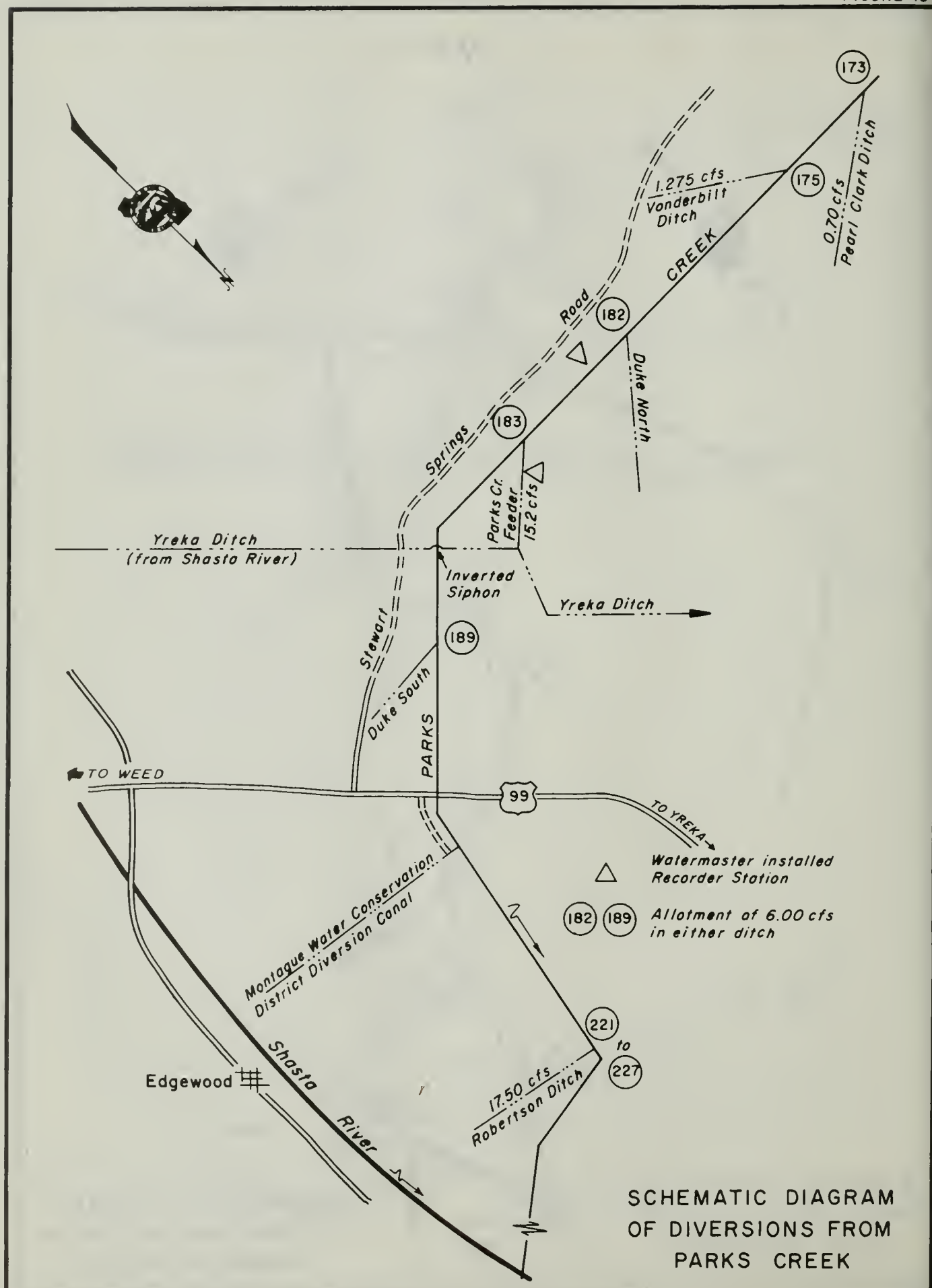
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BOLES CREEK AND SHASTA RIVER ABOVE DWINNELL RESERVOIR

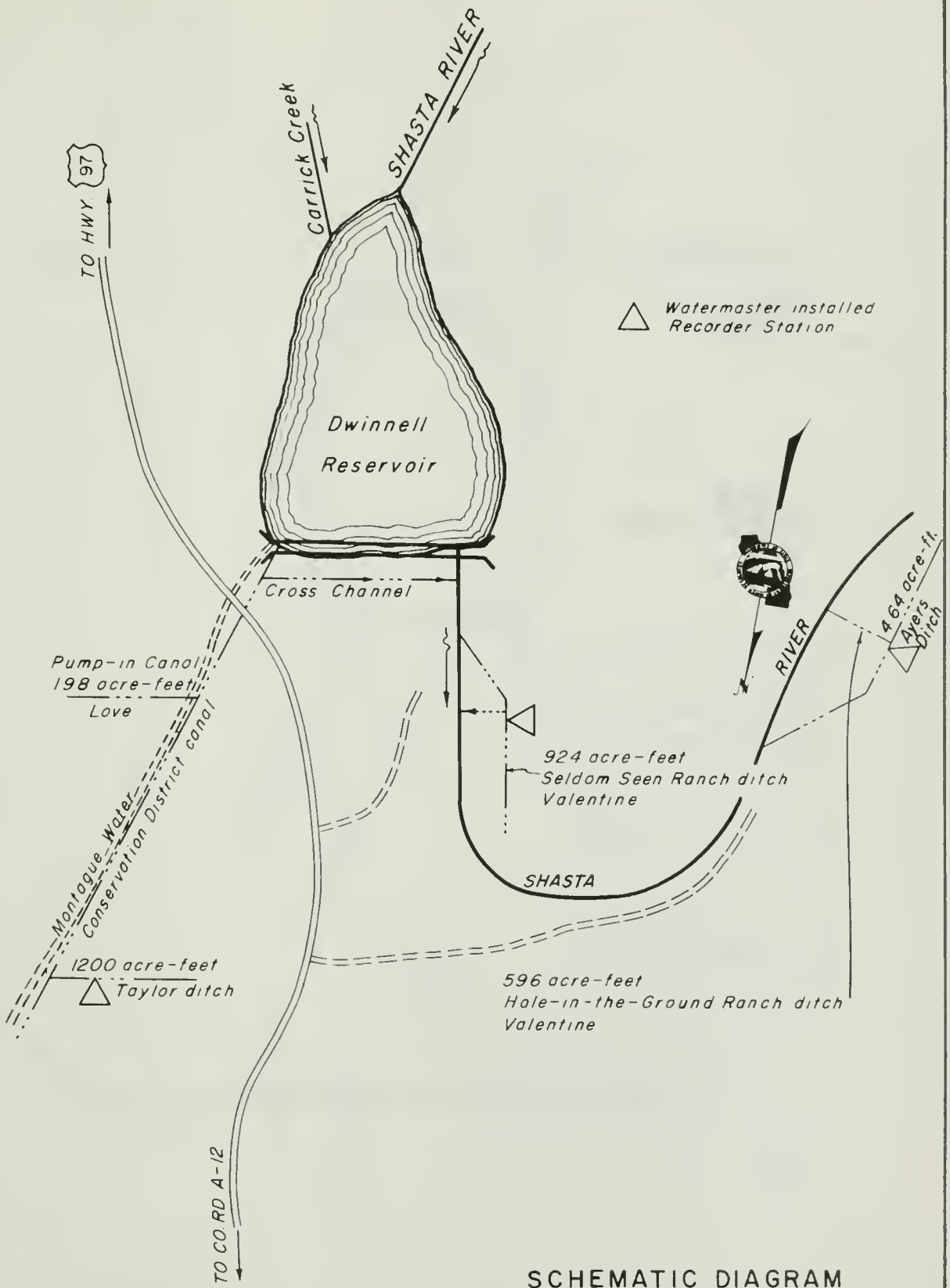


SCHEMATIC DIAGRAM OF DIVERSIONS FROM BEAUGHAN CREEK

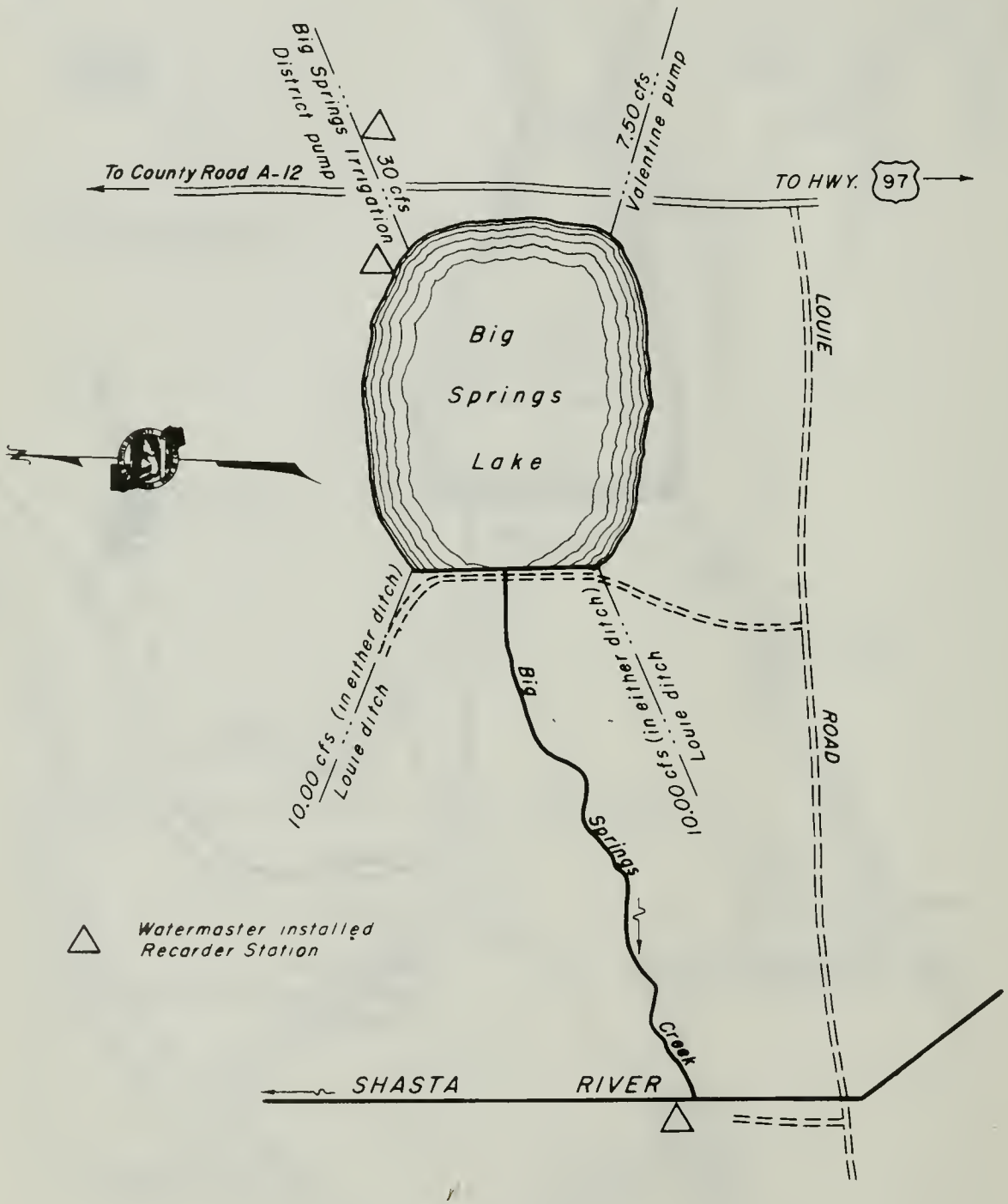


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
CARRICK CREEK

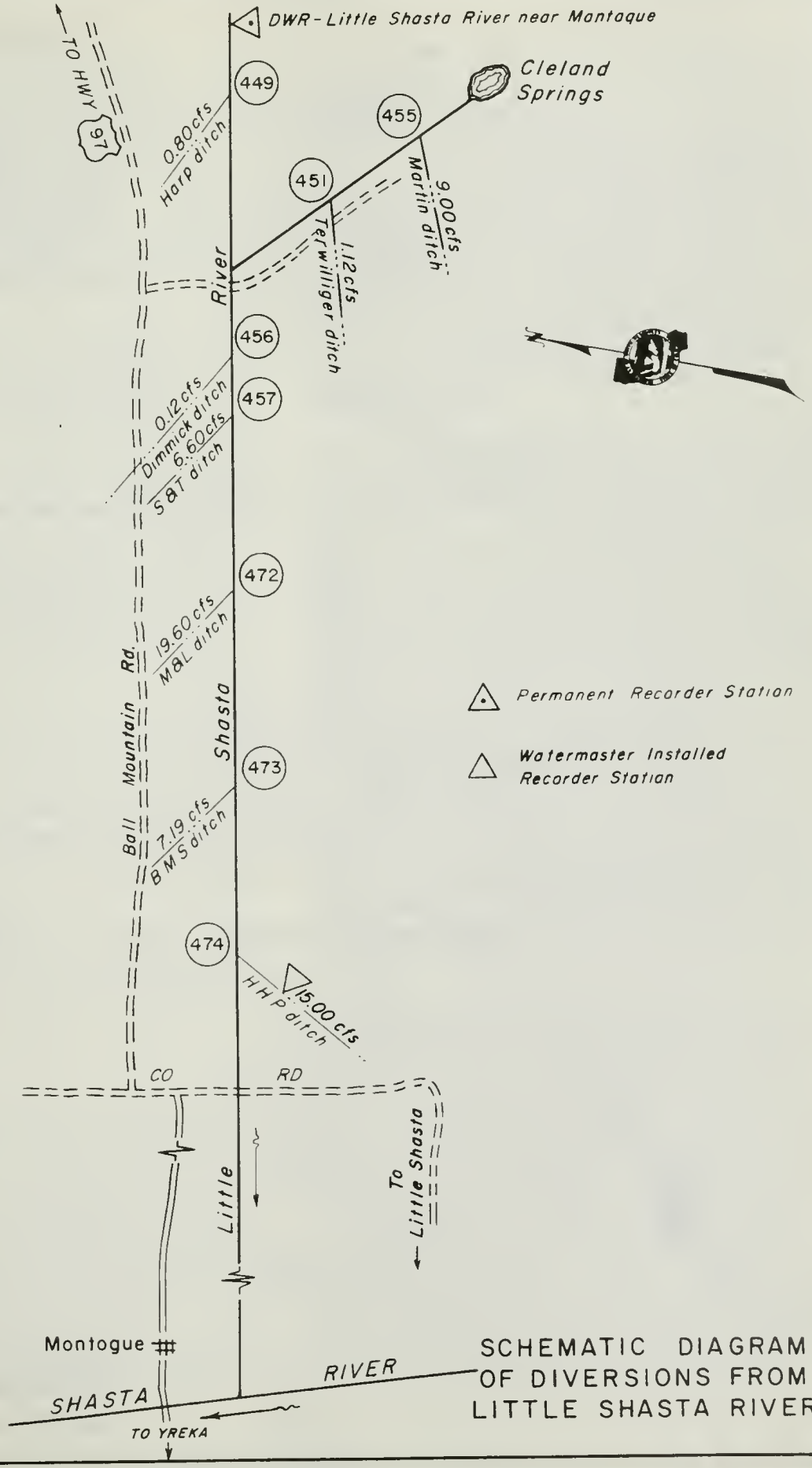

173
175
1.275 cfs
Vonderbilt
Ditch
0.70 cfs
Pearl Clark Ditch
CREEK
Road
182
Duke North
183
Springs
Parks Cr.
Feeder
15.2 cfs
Yreka Ditch
(from Shasta River)
Inverted
Siphon
Yreka Ditch
Stewart
189
Duke South
PARKS
TO WEED
99
TO YREKA
Watermaster installed
Recorder Station
182 189 Allotment of 6.00 cfs
in either ditch
Montague Water Conservation
District Diversion Canal
221
to
227
Edgewood
Shasta
River
17.50 cfs
Robertson Ditch
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PARKS CREEK



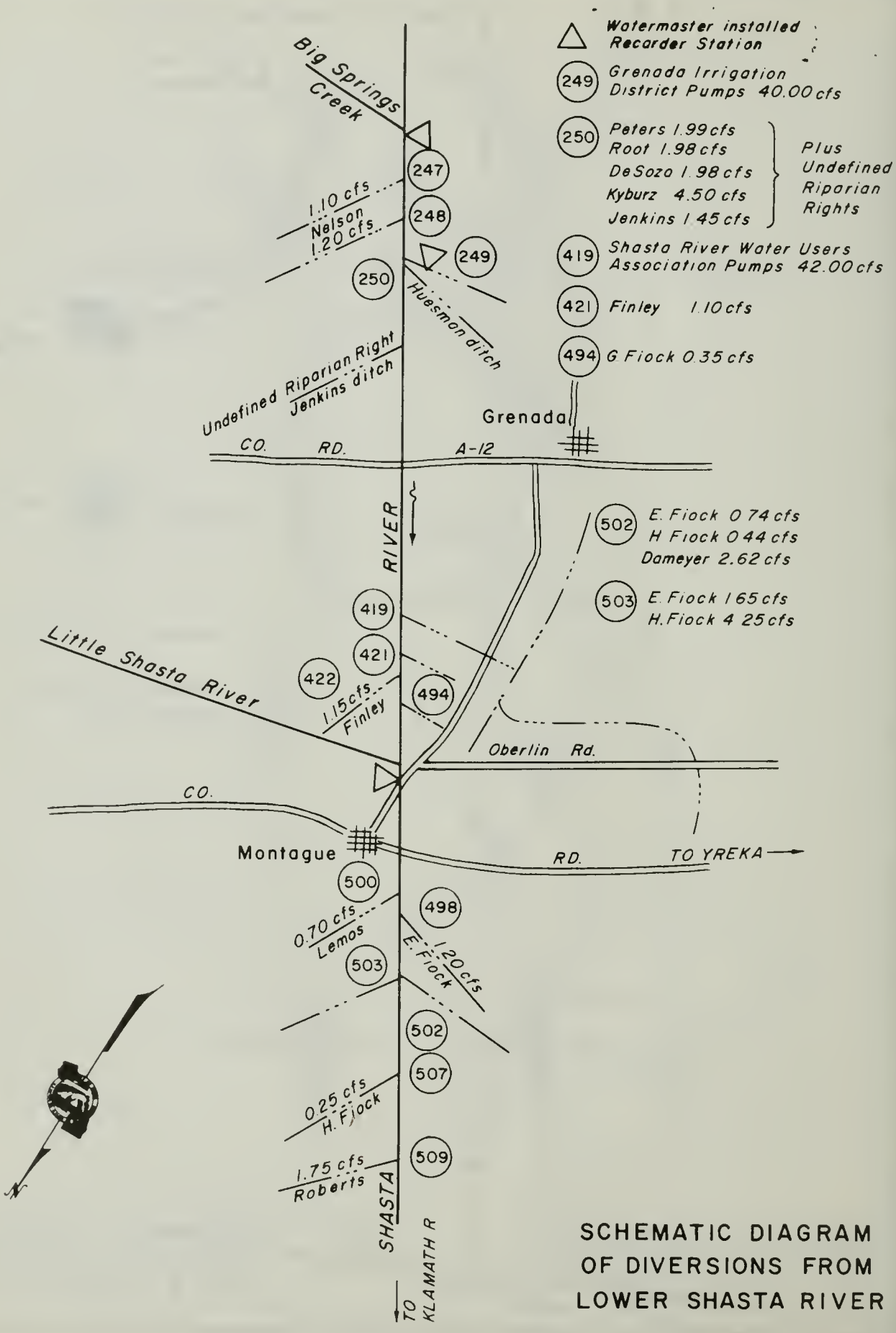
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SHASTA RIVER PRIOR RIGHTS
BELOW DWINNELL RESERVOIR



SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIG SPRINGS LAKE



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LITTLE SHASTA RIVER



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LOWER SHASTA RIVER

South Fork Pit River Watermaster Service Area

The South Fork Pit River service area is located primarily in Modoc County with a small portion extending into the northern part of Lassen County. There are 36 water right owners in the area with total allotments of 350.97 cubic feet per second.

Water supply for this service area is obtained from the South Fork Pit River and its tributaries which rise on the western slopes of the Warner Mountains. The river flows in a westerly direction, entering South Fork Valley near Likely. It then flows north through the valley to its confluence with the North Fork Pit River at Alturas. The South Fork Pit River is joined from the east by Fitzhugh Creek near the middle of the valley and by Pine Creek just south of Alturas.

The major area of water use is in South Fork Valley between Likely and Alturas. South Fork Valley is about 16 miles long and 3 miles wide with the valley floor lying at an elevation of about 4,500 feet. The valley is bounded on both sides by a rocky plateau that separates it from the surrounding mountains.

A schematic drawing of each major stream system within the South Fork Pit River service area is presented as Figures 16 through 16d, pages 113 through 117.

Water Supply

The water supply for Pine Creek is derived mostly from snowmelt runoff. Therefore, runoff is usually small in the early spring, increases to a peak in May as temperatures rise, and then gradually decreases throughout the remainder of the season. Water users supplement their irrigation supplies from other sources whenever possible.

The water supply for Fitzhugh Creek consists of snowmelt runoff early in the season and supplemental water diverted from Mill Creek above Jess Valley later in the season. Surplus water from Fitzhugh Creek is diverted into the Payne and French Reservoirs through Payne-French Ditch (Diversion 136) until about June, when the diversion is closed to supply downstream allotments. By July the creek has normally receded until only first priority allotments are available.

Payne Ditch (Diversion 1) is opened to import water from Mill Creek to Fitzhugh Creek when the snow has melted enough to allow access. This imported water is rediverted from North Fork Fitzhugh Creek through the Bowman Ditch to the Bowman Ranch. Return flow from Bowman Ranch to the creek is rediverted through Diversion 136 for stockwatering purposes in the Payne-French Ditch.

The water supply for the South Fork Pit River is derived primarily from snowmelt runoff, supplemented by water released from West Valley Reservoir. A number of streams, which rise at high elevations, collect at the mouth of Jess Valley to form the South Fork Pit River. West Valley Reservoir is located on West Valley Creek which enters the river below Jess Valley.

Most of the water users on the South Fork Pit River, except those in Jess Valley, are in the South Fork Irrigation District. The district stores water in West Valley Reservoir, which has a capacity of 22,240 acre-feet, and releases it to the South Fork Pit River as a supplemental supply when the natural flow becomes insufficient to meet demands. This usually occurs during the middle of June. Reservoir releases, together with the natural flow, are distributed by the watermaster in cooperation with the Board of Directors of the irrigation district. Except for extremely dry years, natural

flow, combined with stored water, is sufficient to supply all demands for water on the South Fork Pit River throughout the irrigation season.

Records of the daily mean discharge of the several stream gaging stations in the area are presented in Tables 38 through 40, pages 111 and 112.

Methods of Distribution

Irrigation of the lands along tributary streams is accomplished by flooding through use of small lateral ditches. The water is distributed on a continuous-flow basis to each user through gravity-flow diversion systems. In some cases, rotation is practiced among several users.

Most irrigation in the South Fork Pit River area is by the check and border method. The lands receive water essentially on demand by supplementing natural flow with releases from West Valley Reservoir. However, irrigation between the various ranches must be coordinated to eliminate large peak demands from the reservoir and to use the return flow as much as possible. Actual distribution varies each year as there is no specific irrigation schedule in use.

The South Fork Pit River decree and the Pine Creek Agreement (see Table 1) establish a two-priority class system of distribution for the Fitzhugh Creek and Pine Creek stream systems. Distribution to the South Fork Pit River users (the decree provides for a two-priority class system) is carried out on an equal and correlative basis in accordance with the water requirements for each ranch. This method of operation was made possible by construction of West Valley Reservoir in 1937.

1969 Distribution

Watermaster service began April 22 in the South Fork Pit River service area and continued until September 30. Lynn W. Peterson, W. R. Technician II, was watermaster during this period.

The water supply for the 1969 irrigation season was well above average. Heavy winter storms created a near record snowpack in the Warner Mountains. High runoff occurred in most streams until late spring. However, the extremely hot and dry summer caused flows in the smaller tributaries to decrease rapidly. Consequently, only an average supply of water was available in these streams during late summer.

Pine Creek. An abundant water supply existed in Pine Creek until about July 1. All priority allotments (two priorities) were satisfied during most of this period. Many water users frequently did not require all of their entitlements. During June heavy rains caused high flows on several occasions. At these times the surplus water was diverted into Dorris Reservoir for storage.

As the streamflow decreased during the latter part of the season, those water users with multiple diversion points followed their customary practice of rotating their allotments among their various ditches. At the end of the season sufficient water was available to serve about 50 percent of first priority allotments.

Fitzhugh Creek. Regulation began in late June when the Yankee Jim and Bowman ditches became accessible. At that time surplus water was still available. The Payne Ditch from Mill Creek was opened July 2. This imported water was added to the Bowman Ditch allotment in accordance with the decree. At the end of the season the available water supply had decreased to about 65 percent of first priority allotments (two priorities).

South Fork Pit River. The natural flow of the South Fork Pit River was sufficient to meet all demands until July 18. Releases from West Valley Reservoir began at that time and continued throughout the season. The reservoir reached its capacity of 22,240 acre-feet on April 16. At the end of September, 7,160 acre-feet remained in storage.

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 38

SOUTH FORK PIT RIVER NEAR LIKELY

Day	March	April	May	June	July	August	September	Day
1	16	103	369	248	83	139	164	1
2	14	98	354	232	79	145	142	2
3	12	87	357	219	67	161	116	3
4	10	78	348	219	75	150	103	4
5	8.6	90	351	219	77	111	93	5
6	7.0	96	369	217	83	92	93	6
7	5.8	103	408	202	73	108	93	7
8	4.4	90	478	198	70	137	92	8
9	3.8	81	565	237	70	139	93	9
10	3.6	77	628	223	73	132	92	10
11	3.5	79	664	241	63	124	89	11
12	3.5	88	719	212	53	118	89	12
13	3.7	90	698	196	47	126	92	13
14	5.0	94	691	194	49	137	92	14
15	12	88	664	184	50	162	90	15
16	19	88	616	174	42	184	90	16
17	25	110	565	168	34	184	90	17
18	30	163	530	164	52	180	92	18
19	35	184	515	184	70	176	94	19
20	41	223	483	186	70	176	96	20
21	43	269	449	176	73	174	94	21
22	67	322	422	152	72	172	90	22
23	76	369	397	145	70	170	75	23
24	62	375	381	154	83	170	52	24
25	65	357	366	136	98	170	53	25
26	78	345	351	136	134	168	52	26
27	87	339	324	124	134	170	50	27
28	94	339	299	106	134	170	47	28
29	99	348	274	94	130	170	46	29
30	102	360	266	90	130	168	46	30
31	106		257		127	166		31
Mean	36.8	184	457	181	79.5	153	86.7	Mean
Runoff In Acre-Feet	2260	10970	28080	10770	4890	9420	5160	Runoff In Acre-Feet

TABLE 39

WEST VALLEY CREEK BELOW WEST VALLEY RESERVOIR

Day	March	April	May	June	July	August	September	Day
1			159	55	20	129	150	1
2			159	51	17	134	130	2
3			154	45	15	134	107	3
4			152	45	13	138	94	4
5			148	43	13	86	84	5
6			140	43	13	86	82	6
7			136	40	13	103	81	7
8			136	40	14	126	81	8
9			144	40	13	126	81	9
10			144	42	13	122	81	10
11			152	41	12	110	81	11
12			152	40	9.9	108	81	12
13			152	39	9.5	118	81	13
14			144	38	8.5	124	79	14
15			144	37	8.2	144	79	15
16			136	36	6.8	164	77	16
17			136	36	6.5	162	77	17
18			134	36	25 #	162	75	18
19			124	36	41	160	75	19
20			118	36	41	159	75	20
21			114	35	41	159	73	21
22			107	35	42	158	64	22
23		136*	107	35	49	156	56**	23
24		152	100	35	60	156		24
25		154	94	33	84	154		25
26		158	77	30	118	153		26
27		162	77	29	118	150		27
28		165	68	26	118	150		28
29		159	65	23	118	150		29
30		159	62	22	118	150		30
31			59		118	150		31
Mean		156	122	37.4	41.8	138	84.5	Mean
Runoff In Acre-Feet		2470	7520	2220	2570	8490	3860	Runoff In Acre-Feet

* Beginning of Record
** End of Record
\# Beginning of Releases

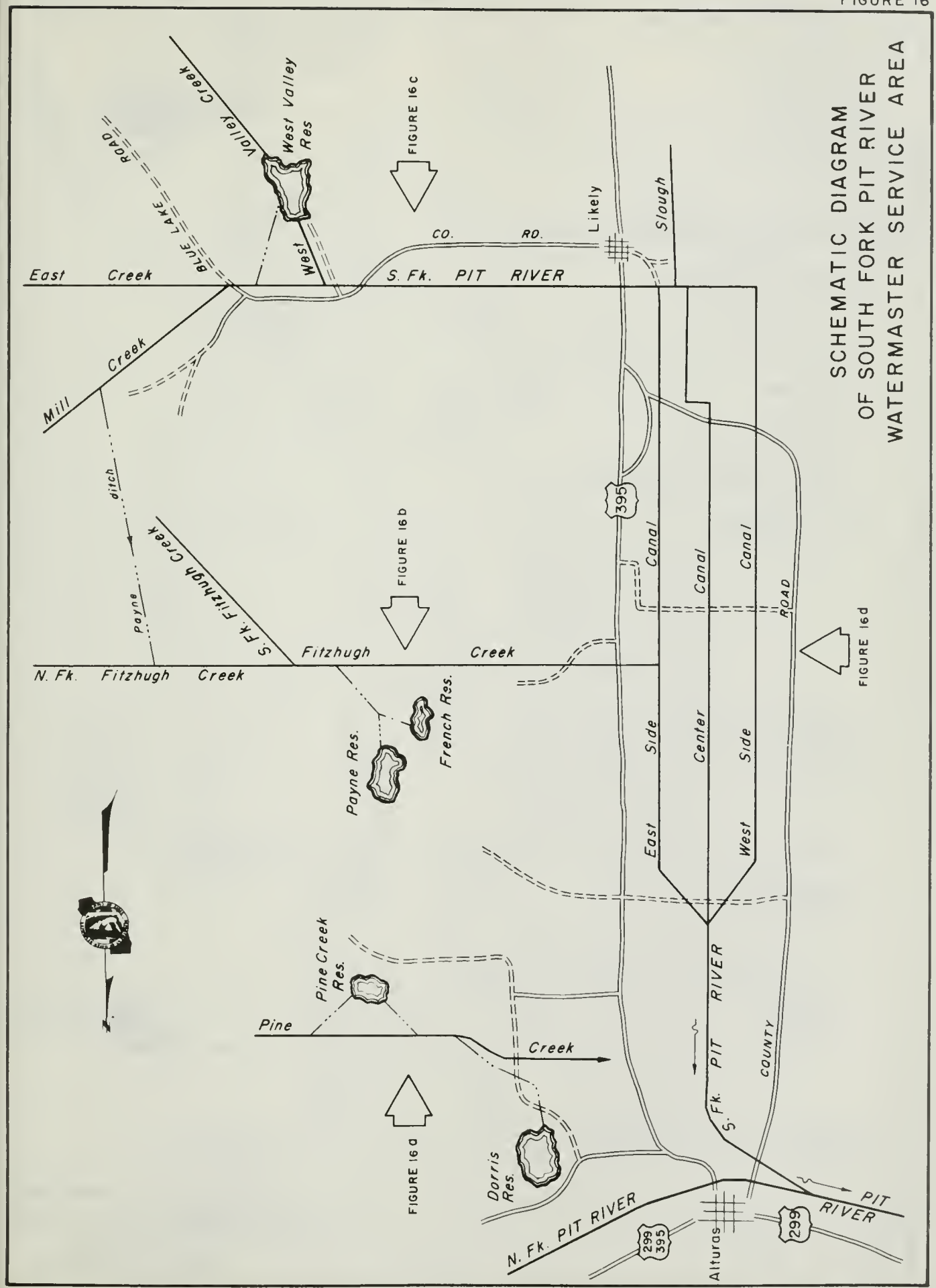
SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

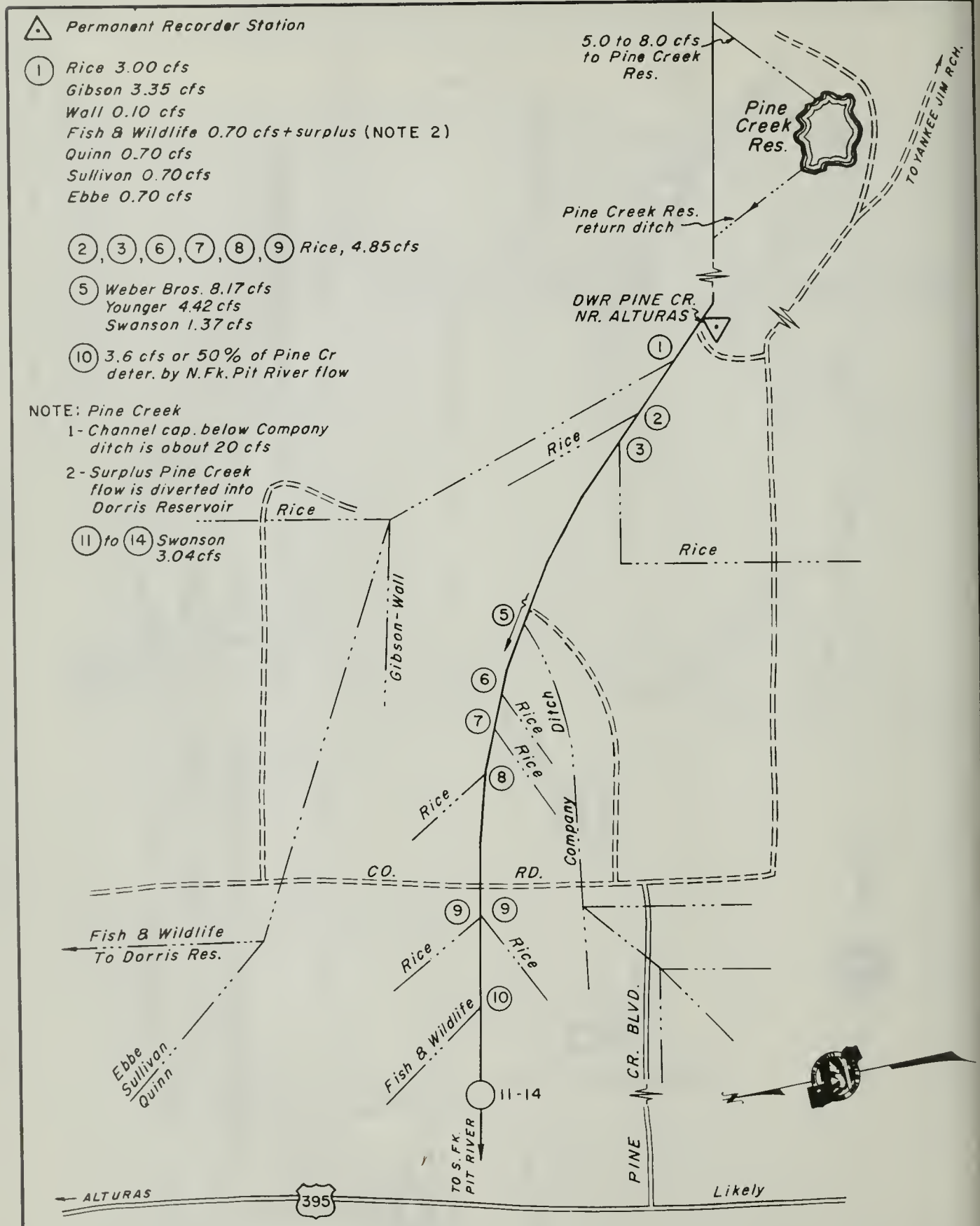
1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 40

PINE CREEK NEAR ALTURAS

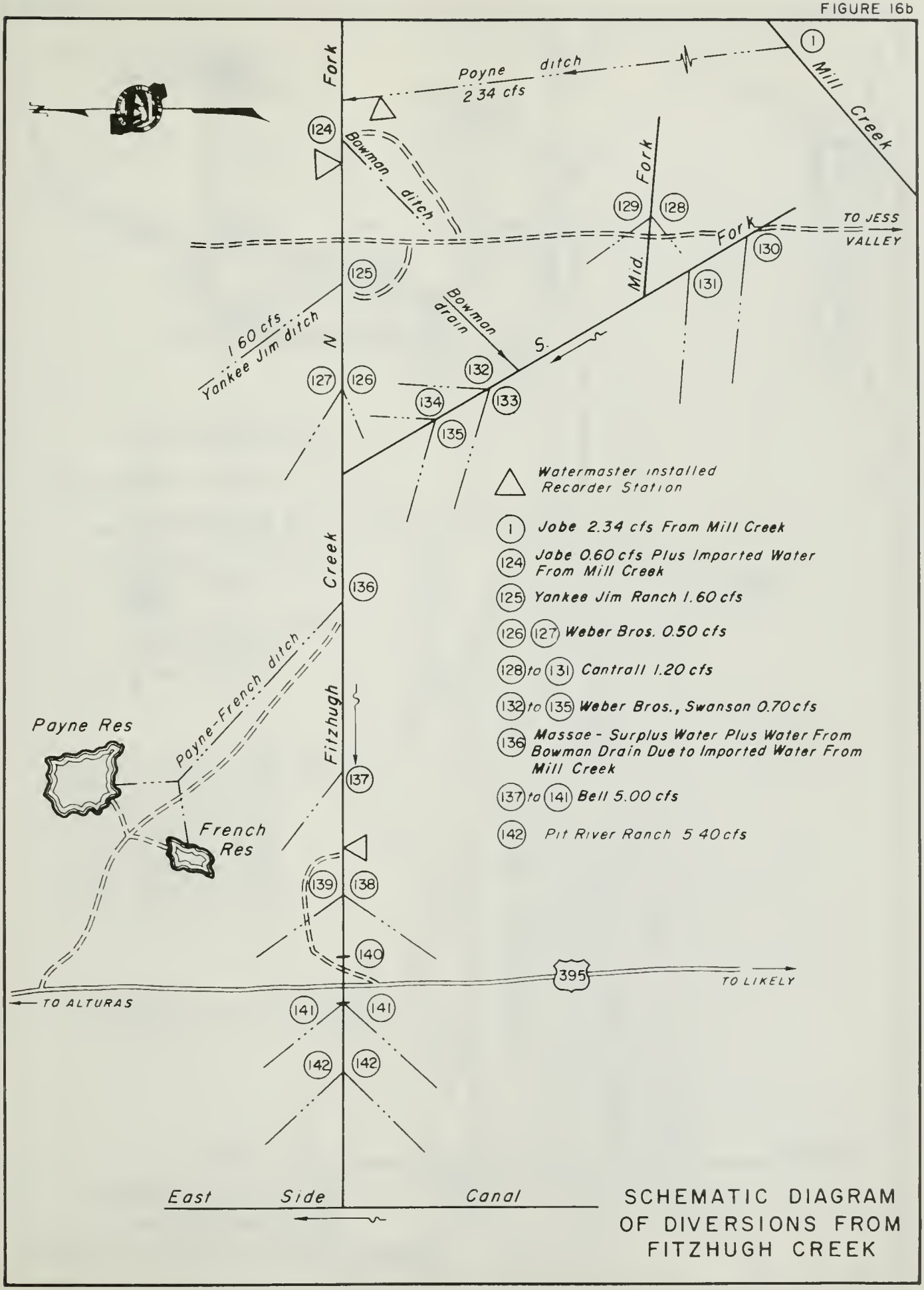
Day	March	April	May	June	July	August	September	Day
1	13	31	42	67	30	16	14	1
2	13	29	40	67	29	16	13	2
3	14	26	40	64	29	16	13	3
4	14	25	39	62	28	16	13	4
5	14	28	40	61	28	16	13	5
6	14	29	45	61	27	16	13	6
7	14	31	51	61	25	16	13	7
8	14	29	58	64	25	16	13	8
9	14	25	62	65	25	15	13	9
10	14	25	69	61	25	15	13	10
11	14	26	93	63	24	15	13	11
12	14	28	104	53	23	15	13	12
13	14	29	115	50	23	14	13	13
14	14	30	115	48	22	14	13	14
15	14	28	102	46	21	14	13	15
16	14	28	98	46	20	14	13	16
17	23	30	91	46	20	14	13	17
18	31	35	90	44	19	14	13	18
19	21	33	93	43	18	14	13	19
20	18	34	91	42	18	14	13	20
21	18	38	88	40	18	14	13	21
22	30	44	87	39	18	14	13	22
23	26	46	87	39	18	14	13	23
24	19	46	88	37	18	14	13	24
25	19	42	88	36	18	14	12	25
26	20	35	88	36	18	14	12	26
27	20	34	88	35	18	14	12	27
28	21	36	82	35	17	14	12	28
29	23	41	77	33	17	14	12	29
30	27	41	69	31	17	14	12	30
31	31		67		17	14		31
Mean	18.4	32.7	77.0	49.2	21.7	14.6	12.8	Mean
Runoff In Acre-Feet	1130	1950	4740	2930	1340	900	764	Runoff In Acre-Feet


SCHEMATIC DIAGRAM
OF SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA
Blue Lake Road
Valley Creek
West Valley Res
West
FIGURE 16c
CO. RD.
Likely
Slough
East Creek
S. Fk. PIT RIVER
Mill Creek
ditch
Payne
S. Fk. Fitzhugh Creek
FIGURE 16b
Fitzhugh Creek
N. Fk. Fitzhugh Creek
395
Canal
Canal
Canal
ROAD
FIGURE 16d
Payne Res.
French Res.
Side
Center
Side
East
West
Pine Creek Res.
Pine
Creek
S. Fk. PIT RIVER
COUNTY
FIGURE 16a
Dorris Res.
N. Fk. PIT RIVER
299
395
Alturas
299
PIT RIVER

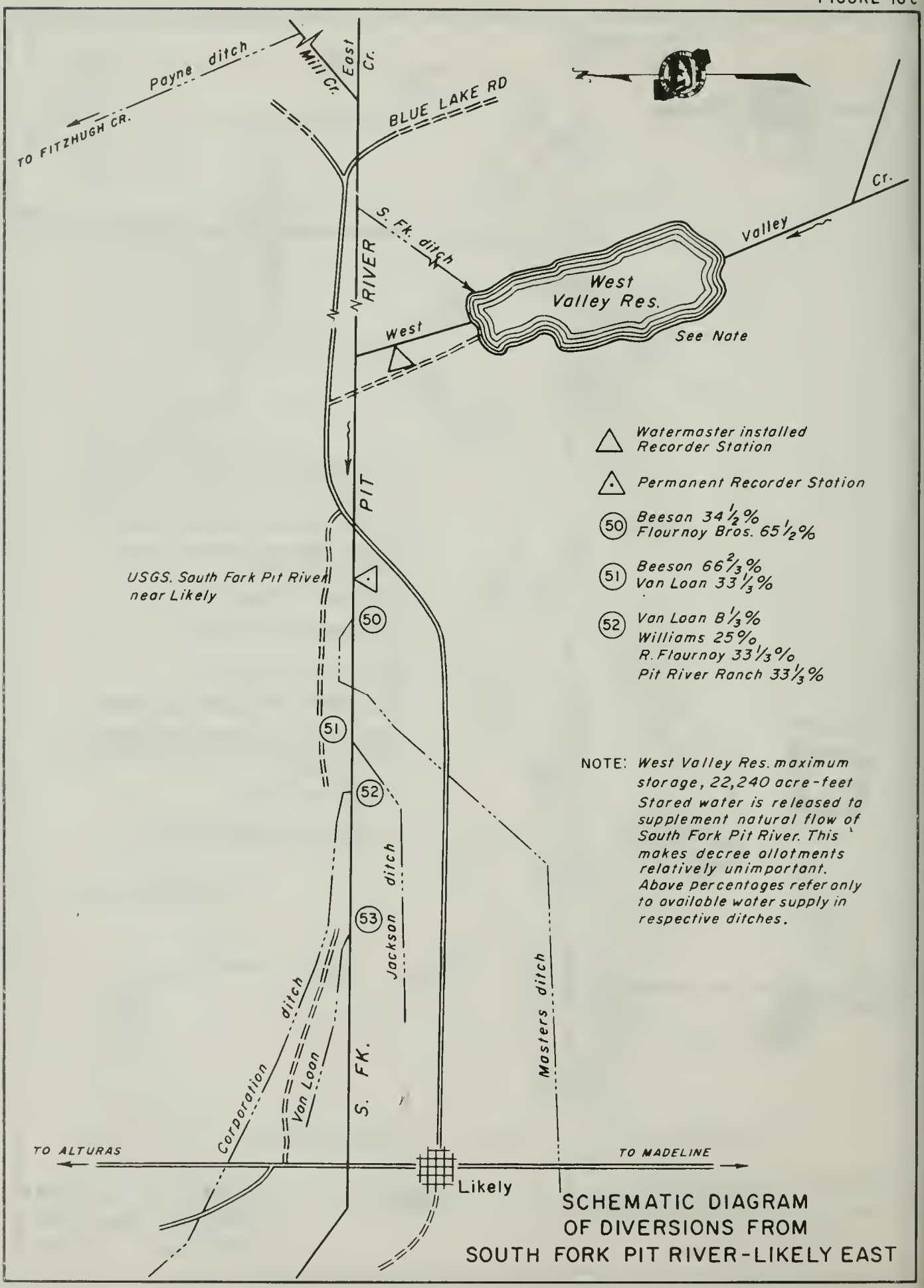


SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK

FIGURE 16b

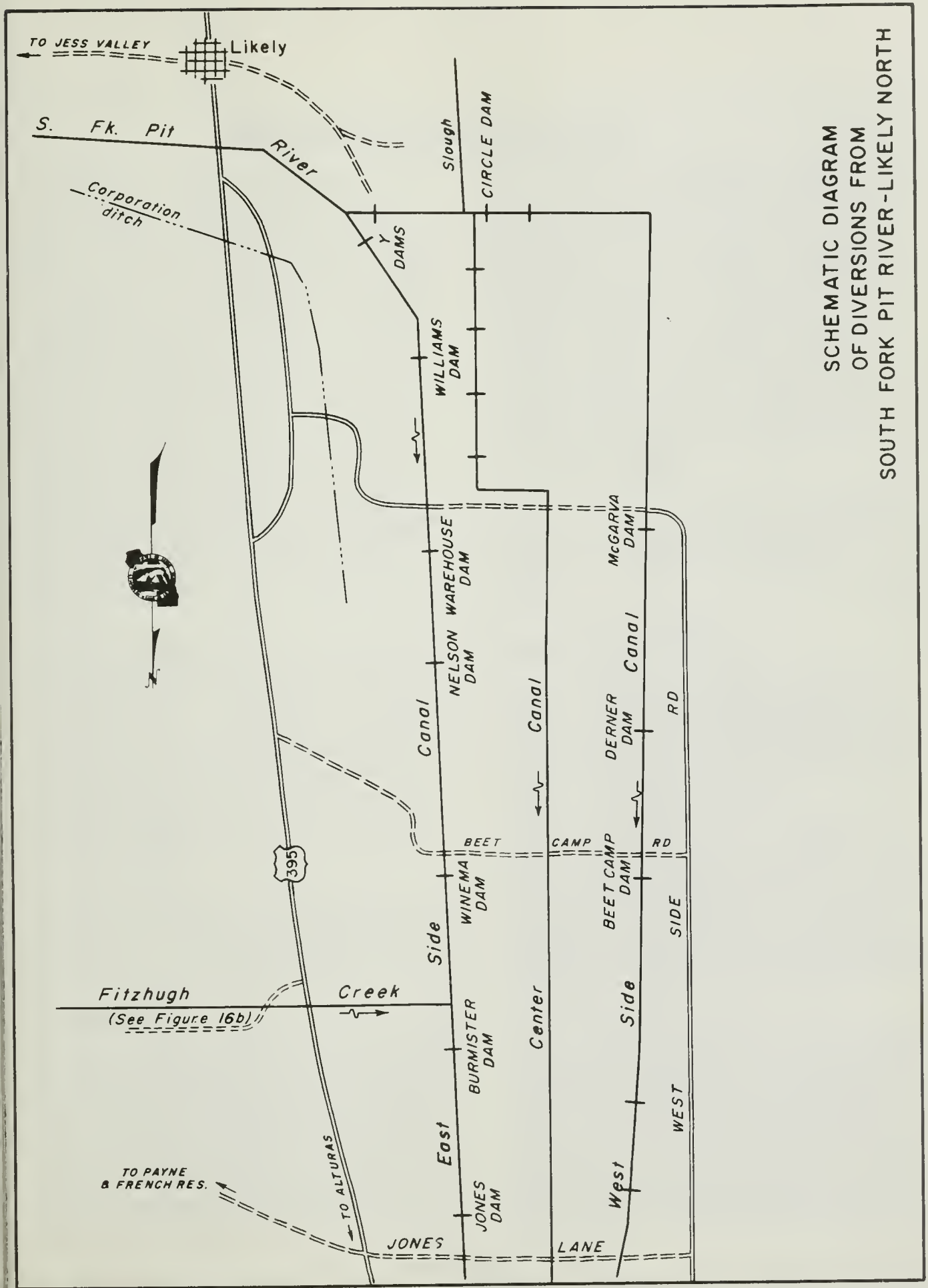


SCHEMATIC DIAGRAM OF DIVERSIONS FROM FITZHUGH CREEK



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SOUTH FORK PIT RIVER-LIKELY EAST

FIGURE 16d



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SOUTH FORK PIT RIVER-LIKELY NORTH

Surprise Valley Watermaster Service Area

The Surprise Valley service area is located in the extreme eastern part of Modoc County. There are 172 water right owners in the service area with total allotments of 313.75 cubic feet per second. The source of water supply is comprised of 10 individual stream systems rising on the eastern slope of the Warner Mountains. These streams are fed by snowmelt runoff and traverse a fast, precipitous course down the eastern slope of the Warner Mountains to the valley floor where numerous, scattered diversion ditches convey water to the irrigated lands. The place of use is situated in a long, narrow area extending in a north-south direction between the foot of the Warner Mountains and the Alkali Lakes which lie in the center of Surprise Valley.

Surprise Valley extends from nearly the Oregon border on the north to Lassen County on the south, a distance of approximately 50 miles. The valley varies in width from about 8 to 10 miles. It is bordered on the north, south, and west by the rugged Warner Range and on the east by the typical mountainous desert terrain of Nevada. The valley floor is at an elevation of approximately 4,700 feet.

A schematic drawing of each major stream system with the Surprise Valley service area is presented as Figures 17 through 17j, pages 129 through 140.

Water Supply

The water supply is derived almost entirely from snowmelt runoff, with only minor spring-fed flows occurring in the latter part of the season. There are no known economically justified storage sites on the service area creeks. Because of the lack of regulatory storage, the available water supply at any specific diversion point may vary considerably within a few hours. An extreme differential in day and night temperatures causes extensive variation in snowmelt runoff quantities. This problem is further aggravated by the relatively short and steep drainage area. In addition, occasional summer thundershowers may cause a creek to discharge a flow of mammoth portions for several hours. These flashes are apt to cause considerable damage in washouts and debris deposition and are of such short duration that no beneficial use can be made of the water.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables 41 through 51, pages 122 through 127.

Method of Distribution

The continuous flow method of distribution is employed on most creeks; however, in a few instances the available water supply is rotated among the users in accordance with either decree schedules or by mutual agreements.

Alfalfa and meadow hay, the major crops grown in the valley, are irrigated in most instances by wild flooding, although some lands are dependent upon subsurface irrigation. Also, recent development of deep wells has placed many acres under sprinkler irrigation. Only surface water supplies are under state watermaster service.

To facilitate distribution of irrigation waters, construction of permanent diversion dams, headgates, and measuring devices has been stressed during recent years. Although these structures do not solve the problems of discharge variation and debris deposition, they do provide significant assistance in solving water measurement and distribution problems.

The several decrees (see Table 1) which apply to the Surprise Valley service area establish the following number of priority classes for the various stream systems: Bidwell Creek - four until July 10, five thereafter; Mill Creek - four; Soldier Creek - rotation March 19 to June 19 (upper users eight, lower users seven), twelve priorities in effect during the remainder of the year; Pine Creek - a rotation schedule based on accumulative flow in acre-feet; Cedar Creek - four; Deep Creek - five; Owl Creek - twenty-one; Rader Creek - six; Eagle Creek - four; and Emerson Creek - four.

1969 Distribution

Watermaster service began in the Surprise Valley service area on March 19 and continued until September 30. Jerry T. Erb, Water Resources Technician II, was watermaster during this period.

The 1969 irrigation season was very successful due to an above-normal snowpack in the Warner Mountains. Seasonal runoffs ranged between 95 and 170 percent of their long-term average.

Greater than average crop yields were experienced throughout the valley, especially by ranchers who supplemented their irrigation by ground water pumping. Several new deep wells were drilled in the valley this season.

Bidwell Creek. Total stream runoff available to Bidwell Creek users during the period April 1 through September 30 was 15,170 acre-feet or approximately 130 percent of normal.

Due to a good snowpack in Bidwell Creek Basin, enough runoff was available to supply all allotments until mid-June (four priorities until July 10, five priorities thereafter). From then until July 1, full third priority allotments were supplied. Bidwell Creek then receded at a fairly constant rate, reaching a low of approximately four cubic feet per second in late September. This was enough to supply only first priority allotments.

Mill Creek. Total stream runoff available to Mill Creek users during the period April 1 through September 30 was 4,840 acre-feet or approximately 95 percent of normal. From April through July, sufficient water was available to supply all third priority allotments (four priorities), with some fourth priority water available at times. From August 1 until late September the streamflow decreased steadily. At the end of the season full first priority allotments were being served.

Soldier Creek. Total stream runoff available to Soldier Creek users from March 19 through September 30 was 5,520 acre-feet, or approximately 150 percent of normal. Once the snowpack began melting in April, the stream runoff was sufficient to satisfy all priorities until June 9. Third and second priority water was available in decreasing quantities between June 10 and the middle of August, after which only first priorities were satisfied.

Pine Creek. Total stream runoff available to Pine Creek users during the period March 20 through September 30 was 2,100 acre-feet, or approximately 160 percent of normal. The stream system was operated according to the rotation schedule (on accumulated-flow basis) as set forth in the court decree. On May 23 the flow in Pine Creek dropped below 4.0 cubic feet per second, thereby ending the rotation schedule. From this date through June 4 the entire flow was diverted into the North Channel. On June 5 the creek receded to 1.6 cubic feet per second, and in accordance with the decree, the entire flow was diverted to the Bordwell Ranch via the Cressler ditch. This diversion continued for about five weeks until the water would no longer reach the place of use. From July 11 throughout the remainder of the season, Pine Creek was dry.

Cedar Creek. Total stream runoff available to Cedar Creek users from April 1 through September 30 was 3,850 acre-feet or approximately 145 percent of normal. The supply was sufficient to satisfy all allotments (four priorities) until mid-May. Third priority allotments were terminated a few days later as the flow decreased rapidly. At the end of May about 30 percent of the second priority allotments were satisfied. By the end of June only first priority water was available. A steady decrease in flow continued throughout the remainder of the season, as the creek became nearly dry in late September.

Deep Creek. Total stream runoff available to Deep Creek users from April 1 through September 30 was 6,110 acre-feet, or approximately 170 percent of normal. Since there is only one priority on North Deep Creek, the entire flow (or as much as was usable), was diverted into the Company ditch throughout the entire season. South Deep Creek supplied enough water to fill all five priorities through May 20. Thereafter, the flows declined rapidly until only first priority allotments were available by June 10. The creek continued to recede throughout the remainder of the irrigation season, with only first priority water available in steadily decreasing amounts.

Owl Creek. Total stream runoff available to Owl Creek users from April 1 through September 30 was 8,140 acre-feet, or approximately 130 percent of normal. From the first of April, flows in Owl Creek steadily increased due to melting snows until, by the second week in May, a sufficient supply existed to fill all 21 priorities. The high flows continued, reaching a maximum of 75 cubic feet per second in the middle of June. Thereafter, the creek began receding gradually. Sufficient water was available in August to supply the first two and most of the third "special" eighth priority allotments. The flow continued to steadily decline until by the end of the season only about one cubic foot per second remained.

Rader Creek. Total stream runoff available to Rader Creek users from April 1 through September 30 was 4,180 acre-feet, or approximately 115 percent of normal. By the middle of May the melting snows had increased the flow in Rader Creek enough to satisfy all six priority allotments. By the middle of June the creek had begun to recede. This continued gradually until by the end of August only full first priority allotments were being satisfied. During the month of September only partial first priority water was available.

Eagle Creek. Total stream runoff available to Eagle Creek users from April 1 through September 30 was 6,670 acre-feet, or approximately 130 percent of normal. By the second week in May, Eagle Creek contained enough water to satisfy all four priorities. This continued until the end of June when the creek began to recede. The flows continued to steadily decline throughout the remainder of the season, and by the end of August only first priority water was available.

Emerson Creek. Total stream runoff available to Emerson Creek users from April 1 through September 30 was 4,340 acre-feet, or approximately 125 percent of normal. By the first week in May the melting snow had increased the flow in Emerson Creek to fully satisfy all four priorities. The flow began to recede at the end of May and continued gradually until the season low was reached at the end of August. Sufficient water remained in the creek throughout the remainder of the season to partially satisfy second priority allotments.

SURPRISE VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 41

BIOWELL CREEK NEAR FORT BIOWELL

Day	March	April	May	June	July	August	September	Day
1	5.7	77	80	69	21	7.9	3.9	1
2	5.4	66	80	66	21	7.9	3.8	2
3	5.4	51	74	63	19	7.1	3.8	3
4	5.4	47	71	63	18	7.1	3.8	4
5	5.7	51	74	66	18	7.1	3.8	5
6	5.7	51	88	63	18	7.1	3.8	6
7	5.7	38	102	60	18	6.8	3.8	7
8	5.7	37	116	74	17	6.8	3.8	8
9	5.7	39	135	66	16	6.5	3.8	9
10	5.7	44	163	60	15	6.5	3.6	10
11	6.0	52	188	54	14	6.0	3.6	11
12	6.0	58	247	47	14	5.7	3.6	12
13	6.0	56	208	44	14	5.7	3.6	13
14	6.3	51	175	42	14	5.7	3.6	14
15	6.5	49	135	39	13	5.7	3.6	15
16	7.9	49	126	36	13	5.7	3.6	16
17	8.3	63	130	34	12	5.4	3.6	17
18	8.3	80	151	32	12	5.4	3.8	18
19	7.9	77	141	31	11	4.9	3.9	19
20	7.5	85	116	30	11	4.9	3.9	20
21	7.5	71	110	29	11	4.6	4.1	21
22	8.7	120	106	28	10	4.6	3.9	22
23	13	113	110	31	10	4.6	3.8	23
24	14	99	116	29	10	4.6	3.9	24
25	16	82	113	28	9.8	4.6	3.9	25
26	21	69	110	26	9.4	4.3	3.9	26
27	30	63	92	26	9.0	4.1	3.8	27
28	38	74	80	24	8.7	4.1	3.8	28
29	47	88	71	23	8.7	4.1	3.9	29
30	58	88	71	22	8.3	4.1	3.9	30
31	77		74		8.3	3.9		31
Mean	14.7	66.3	118	43.5	13.3	5.6	3.8	Mean
Runoff In Acre-Feet	906	3940	7250	2590	818	344	225	Runoff In Acre-Feet

TABLE 42

MILL CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		30*	20	16	16	3.8	2.2	1
2		26	20	16	15	3.5	2.2	2
3		20	21	15	14	3.5	2.2	3
4		17	22	15	14	3.3	2.1	4
5		17	22	16	14	3.3	2.2	5
6		15	23	15	14	3.3	2.1	6
7		13	24	14	13	3.0	2.1	7
8		12	25	16	13	3.0	2.1	8
9		10	25	18	12	2.8	2.1	9
10		12	25	15	11	2.7	2.2	10
11		14	25	14	11	2.7	2.2	11
12		16	26	12	11	2.7	2.1	12
13		16	26	9.0	10	2.7	2.1	13
14		18	27	19	10	2.6	2.1	14
15		20	27	38	9.0	2.5	2.1	15
16		22	28	32	8.1	2.6	2.1	16
17		25	28	31	7.3	2.6	2.1	17
18		27	27	31	7.3	2.5	2.1	18
19		30	26	33	6.6	2.5	2.1	19
20		33	25	30	6.0	2.5	2.3	20
21		38	24	27	5.4	2.5	2.2	21
22		39	22	25	5.4	2.5	2.1	22
23		38	23	26	5.4	2.3	2.1	23
24		34	25	24	5.4	2.3	2.1	24
25		25	25	24	5.0	2.3	2.1	25
26		20	24	22	5.0	2.3	2.1	26
27		17	22	20	4.1	2.3	2.1	27
28		17	20	19	4.1	2.5	2.1	28
29		18	18	17	3.8	2.5	2.1	29
30		19	18	16	3.8	2.3	2.1	30
31			17		3.8	2.3		31
Mean		21.9	23.5	20.8	8.6	2.7	2.1	Mean
Runoff In Acre-Feet		1310	1450	1240	543	167	127	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 43

SOLDIER CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		30	30	19	4.1	2.8	1.5	1
2		15	27	18	3.6	2.8	1.5	2
3		13	25	18	3.6	2.8	1.5	3
4		12	25	16	3.9	2.8	1.5	4
5		12	34	15	4.1	2.8	1.7	5
6		11	44	13	4.3	2.8	1.7	6
7		11	55	13	4.6	2.8	1.7	7
8		11	62	14	4.6	2.8	1.5	8
9		11	67	19	4.3	2.6	1.5	9
10		12	70	12	4.3	2.6	1.5	10
11		12	74	12	4.3	2.6	1.5	11
12		13	80	11	4.3	2.4	1.5	12
13		14	74	10	4.1	2.2	1.3	13
14		15	57	9.5	3.6	2.0	1.3	14
15		12	54	7.0	3.6	1.9	1.0	15
16		14	54	6.7	3.6	1.7	1.0	16
17		26	55	6.7	3.6	1.7	1.0	17
18		27	55	6.7	3.6	1.7	0.9	18
19	3.2*	29	46	7.0	3.6	1.5	0.7	19
20	3.3	40	42	7.0	3.6	1.5	0.7	20
21	3.5	54	42	6.1	3.6	1.7	0.7	21
22	3.8	62	42	6.1	3.6	1.9	0.7	22
23	4.3	48	42	6.7	3.6	1.9	0.7	23
24	4.8	35	41	6.1	3.6	1.9	0.7	24
25	6.5	27	37	6.1	3.4	1.9	0.7	25
26	8.6	21	31	5.9	3.4	1.7	0.7	26
27	12	22	27	5.9	3.2	1.7	0.7	27
28	16	41	26	5.3	3.2	1.5	0.7	28
29	20	44	26	4.8	3.0	1.5	0.7	29
30	28	40	27	4.6	2.8	1.5	0.7	30
31	28		21		2.8	1.5		31
Mean	10.9	24.5	44.9	9.9	3.7	2.1	1.1	Mean
Runoff In Acre-Feet	282	1460	2760	591	229	130	66	Runoff In Acre-Feet

* Beginning of Record

TABLE 44

PINE CREEK AT DIVISION OF NORTH AND SOUTH CHANNELS

Day	March	April	May	June	July	August	September	Day
1		36	15	2.2	0.5			1
2		27	14	1.9	0.5			2
3		20	11	1.8	0.4			3
4		22	9.1	1.7	0.4			4
5		22	11	1.5	0.3			5
6		16	11	1.5	0.3			6
7		13	11	1.5	0.2			7
8		13	11	1.4	0.2			8
9		15	12	1.4	0.1			9
10		18	16	1.4	0.1			10
11		20	20	1.3	0.0**			11
12		22	25	1.3				12
13		20	18	1.3				13
14		16	14	1.2				14
15		13	12	1.2				15
16		12	10	1.2				16
17		11	9.1	1.0				17
18		12	9.1	1.0				18
19		13	9.1	1.0				19
20	1.6*	26	7.5	0.9				20
21	1.7	40	5.5	0.9				21
22	1.8	40	4.5	0.9				22
23	2.0	27	3.8	0.8				23
24	3.3	20	3.5	0.8				24
25	3.8	15	3.3	0.8				25
26	5.4	12	2.8	0.7				26
27	9.8	12	3.3	0.7				27
28	14	20	3.1	0.7				28
29	20	25	2.8	0.6				29
30	32	20	2.8	0.6				30
31	32		2.4	0.6				31
Mean	10.6	19.9	9.4	1.2	0.3			Mean
Runoff In Acre-Feet	253	1190	581	71	6			Runoff In Acre-Feet

* Beginning of Record
** End of Flow

SURPRISE VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 45

CEDAR CREEK AT CEDARVILLE

Day	March	April	May	June	July	August	September	Day
1	4.6	41	30	11	4.0	1.0	0.4	1
2	4.6	35	28	11	3.8	1.0	0.4	2
3	4.4	30	26	9.9	3.3	0.9	0.4	3
4	4.6	30	25	9.6	3.1	0.8	0.4	4
5	4.8	31	24	9.0	2.8	0.8	0.3	5
6	4.6	28	24	9.0	2.8	0.8	0.3	6
7	4.8	26	24	8.4	2.8	0.8	0.3	7
8	4.2	25	25	8.4	2.6	0.8	0.3	8
9	4.2	25	26	8.7	2.4	0.8	0.3	9
10	4.4	25	26	8.7	2.3	0.8	0.3	10
11	4.6	28	26	7.8	2.0	0.7	0.3	11
12	4.0	30	27	6.7	2.0	0.6	0.3	12
13	4.2	31	27	5.9	1.9	0.6	0.3	13
14	4.4	30	27	5.9	1.8	0.6	0.3	14
15	4.8	28	25	6.2	1.7	0.5	0.3	15
16	5.2	27	24	6.2	1.6	0.5	0.3	16
17	5.9	29	24	6.2	1.6	0.5	0.3	17
18	6.2	36	23	5.6	1.4	0.4	0.3	18
19	5.9	35	23	5.6	1.5	0.4	0.3	19
20	5.9	38	23	5.6	1.4	0.4	0.3	20
21	6.5	40	22	5.4	1.3	0.4	0.2	21
22	7.8	42	22	5.2	1.3	0.3	0.2	22
23	9.6	42	21	5.2	1.3	0.3	0.2	23
24	11	38	20	5.4	1.4	0.3	0.2	24
25	12	34	20	5.2	1.4	0.4	0.2	25
26	15	32	18	5.2	1.3	0.4	0.2	26
27	22	30	16	5.2	1.2	0.4	0.2	27
28	27	29	14	5.0	1.2	0.4	0.2	28
29	32	30	13	4.8	1.1	0.4	0.2	29
30	43	30	13	4.4	1.1	0.4	0.2	30
31	44		12		1.1	0.4		31
Mean	10.5	31.8	22.5	6.9	2.0	0.6	0.3	Mean
Runoff In Acre-Feet	647	1890	1380	409	120	35	17	Runoff In Acre-Feet

TABLE 46

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		32*	18	8.7	1.9	1.0	0.7	1
2		22	18	8.4	1.9	0.9	0.7	2
3		19	18	7.7	1.8	0.9	0.7	3
4		21	18	7.4	1.7	0.8	0.8	4
5		20	17	7.1	1.6	0.8	0.8	5
6		18	20	6.8	1.5	0.8	0.8	6
7		17	22	6.8	1.5	0.8	0.8	7
8		16	21	7.1	1.5	0.8	0.8	8
9		17	21	7.1	1.4	0.8	0.8	9
10		17	21	6.5	1.4	0.8	0.8	10
11		18	24	6.5	1.3	0.8	0.8	11
12		21	24	5.7	1.2	0.8	0.8	12
13		21	24	5.3	1.2	0.8	0.8	13
14		20	21	4.9	1.2	0.8	0.8	14
15		21	18	4.5	1.2	0.8	0.8	15
16		22	18	4.2	1.2	0.8	0.8	16
17		24	16	4.0	1.2	0.8	0.8	17
18		26	16	3.6	1.2	0.8	0.8	18
19		27	16	3.6	1.2	0.8	0.9	19
20		27	14	3.4	1.2	0.8	0.8	20
21		30	13	3.2	1.2	0.7	0.8	21
22		33	13	2.8	1.2	0.7	0.8	22
23		31	12	3.2	1.2	0.7	0.8	23
24		24	12	2.8	1.2	0.7	0.8	24
25		20	12	2.6	1.2	0.7	0.8	25
26		18	12	2.6	1.1	0.7	0.8	26
27		18	11	2.6	1.1	0.7	0.8	27
28		18	11	2.4	1.1	0.7	0.8	28
29		18	10	2.1	1.1	0.7	0.8	29
30		18	10	2.1	1.1	0.7	0.8	30
31			9.1		1.0	0.7		31
Mean		21.6	16.5	4.9	1.3	0.8	0.8	Mean
Runoff In Acre-Feet		1300	1010	289	81	48	47	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 47

SOUTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		36*	24	10	2.6	0.6	0.3	1
2		25	21	9.0	2.6	0.6	0.3	2
3		21	20	8.0	2.5	0.6	0.3	3
4		22	19	6.9	2.3	0.6	0.3	4
5		21	20	6.9	2.0	0.6	0.3	5
6		19	24	6.2	1.9	0.6	0.3	6
7		17	28	5.1	1.9	0.6	0.3	7
8		16	31	8.5	1.9	0.6	0.3	8
9		17	35	8.0	1.9	0.6	0.3	9
10		19	38	5.0	1.9	0.6	0.3	10
11		21	40	4.9	1.9	0.6	0.3	11
12		24	40	4.1	1.9	0.6	0.3	12
13		25	36	3.7	1.8	0.6	0.3	13
14		26	33	3.5	1.7	0.6	0.3	14
15		26	30	3.3	1.6	0.6	0.3	15
16		27	28	3.2	1.5	0.6	0.3	16
17		28	26	3.2	1.5	0.6	0.3	17
18		28	25	3.0	1.4	0.5	0.3	18
19		28	24	3.0	1.2	0.5	0.3	19
20		28	22	3.0	1.1	0.5	0.3	20
21		31	20	2.9	1.1	0.4	0.3	21
22		37	20	2.8	1.0	0.4	0.3	22
23		31	19	3.0	1.0	0.4	0.3	23
24		26	17	2.8	1.0	0.4	0.3	24
25		22	17	2.6	1.0	0.4	0.3	25
26		20	16	2.8	1.0	0.4	0.3	26
27		21	15	2.8	0.8	0.4	0.3	27
28		23	14	2.8	0.7	0.4	0.3	28
29		25	13	2.8	0.6	0.4	0.3	29
30		26	12	2.8	0.6	0.4	0.3	30
31			11		0.6	0.4		31
Mean		24.5	23.8	4.6	1.5	0.5	0.3	Mean
Runoff In Acre-Feet		1460	1460	271	92	32	18	Runoff In Acre-Feet

* Beginning of Record

TABLE 48

OWL CREEK BELOW ALLEN-ARRECHE DITCH

Day	March	April	May	June	July	August	September	Day
1		17*	26	56	18	4.7	1.6	1
2		17	25	54	19	4.4	1.6	2
3		17	24	57	19	4.3	1.6	3
4		19	23	60	18	4.0	1.6	4
5		18	25	63	19	3.9	1.6	5
6		18	30	63	18	3.7	1.5	6
7		14	39	61	16	3.5	1.5	7
8		14	49	59	15	3.3	1.4	8
9		15	45	55	15	3.0	1.5	9
10		17	48	49	15	2.9	1.5	10
11		18	44	46	14	2.7	1.5	11
12		20	73	44	14	2.6	1.4	12
13		21	75	44	14	2.5	1.4	13
14		21	60	50	13	2.3	1.3	14
15		20	55	52	12	2.3	1.3	15
16		22	60	42	11	2.3	1.3	16
17		28	64	39	10	2.2	1.3	17
18		29	63	38	10	2.1	1.3	18
19		26	64	38	10	2.0	1.5	19
20		27	59	39	9.8	1.9	1.4	20
21		35	61	36	8.9	1.9	1.3	21
22		38	65	34	8.5	1.8	1.3	22
23		34	64	33	8.1	1.7	1.2	23
24		28	70	32	7.9	1.6	1.2	24
25		23	75	28	7.3	1.6	1.2	25
26		21	67	26	6.8	1.6	1.2	26
27		21	58	23	6.4	1.6	1.2	27
28		25	56	21	5.9	1.6	1.2	28
29		30	60	19	5.5	1.7	1.2	29
30		28	67	18	5.3	1.6	1.2	30
31			64		5.0	1.7		31
Mean		22.7	53.4	42.6	11.8	2.5	1.4	Mean
Runoff In Acre-Feet		1350	3290	2540	724	157	82	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 49

RAGER CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		12*	10	36	8.0	2.5	1.0	1
2		9.2	9.8	36	8.0	2.5	0.9	2
3		7.5	9.2	36	8.2	2.4	0.9	3
4		7.2	8.5	40	8.0	2.3	0.9	4
5		6.2	9.0	39	7.8	2.3	0.9	5
6		4.8	12	36	7.7	2.2	0.8	6
7		4.8	17	36	7.5	2.1	0.8	7
8		5.5	19	34	7.2	2.1	0.8	8
9		5.1	22	31	7.0	2.0	0.8	9
10		5.5	24	28	6.8	2.0	0.8	10
11		6.7	34	27	6.7	1.9	0.8	11
12		7.0	36	27	6.5	1.9	0.8	12
13		6.8	38	27	6.3	1.8	0.7	13
14		6.7	32	25	6.3	1.8	0.7	14
15		6.3	30	23	5.5	1.7	0.7	15
16		6.3	30	23	5.0	1.7	0.7	16
17		7.2	34	21	4.7	1.6	0.7	17
18		8.0	39	21	4.4	1.6	0.8	18
19		9.2	38	20	4.1	1.5	0.8	19
20		12	30	20	3.9	1.4	0.8	20
21		14	30	19	3.8	1.4	0.7	21
22		18	34	18	3.7	1.4	0.7	22
23		18	36	17	3.6	1.3	0.7	23
24		14	43	16	3.5	1.2	0.7	24
25		10	43	15	3.3	1.2	0.7	25
26		10	40	13	3.1	1.2	0.7	26
27		10	35	11	3.1	1.2	0.7	27
28		10	31	9.8	3.0	1.2	0.7	28
29		10	30	9.0	2.8	1.2	0.7	29
30		10	35	8.5	2.7	1.1	0.7	30
31			40		2.6	1.0		31
Mean		8.9	28.3	24.1	5.3	1.7	0.8	Mean
Runoff In Acre-Feet		532	1740	1430	327	105	46	Runoff In Acre-Feet

* Beginning of Record

TABLE 50

EAGLE CREEK AT EAGLEVILLE

Day	March	April	May	June	July	August	September	Day
1	3.3	15	19	39	26	10	2.8	1
2	3.3	13	17	40	27	11	2.8	2
3	3.2	11	17	42	27	11	2.6	3
4	3.2	10	16	43	27	10	2.6	4
5	3.2	11	17	45	27	9.0	2.6	5
6	3.1	9.0	18	48	25	9.0	2.6	6
7	3.1	8.2	13	45	23	9.0	2.6	7
8	3.1	8.2	28	44	22	8.2	2.5	8
9	3.0	8.2	36	43	21	8.2	2.5	9
10	3.0	8.2	40	42	20	8.2	2.5	10
11	3.0	9.7	42	41	19	6.0	2.5	11
12	3.0	12	48	40	18	5.5	2.5	12
13	2.9	11	53	42	17	5.2	2.4	13
14	2.9	9.7	51	38	16	5.2	2.3	14
15	2.9	9.7	35	37	16	5.5	2.3	15
16	2.9	9.7	35	36	15	5.2	2.3	16
17	2.8	11	36	35	14	4.5	2.4	17
18	2.8	14	42	35	14	4.5	2.3	18
19	2.8	15	40	36	13	4.5	2.1	19
20	2.8	17	40	37	13	4.5	2.1	20
21	2.8	19	39	35	12	4.2	2.1	21
22	3.2	20	40	34	11	4.2	2.1	22
23	3.4	20	41	33	10	3.6	2.1	23
24	3.6	19	36	32	9.7	3.6	2.1	24
25	4.2	16	39	31	10	3.6	1.9	25
26	5.5	14	41	29	11	3.4	2.0	26
27	7.7	15	39	29	12	3.2	2.0	27
28	9.0	14	38	28	12	3.0	1.9	28
29	11	17	39	27	12	3.0	1.9	29
30	16	19	43	26	12	3.0	1.9	30
31	18		42		12	3.0		31
Mean	4.7	13.1	34.8	37.1	16.9	5.9	2.3	Mean
Runoff In Acre-Feet	287	781	2140	2210	1040	361	137	Runoff In Acre-Feet

SURPRISE VALLEY WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

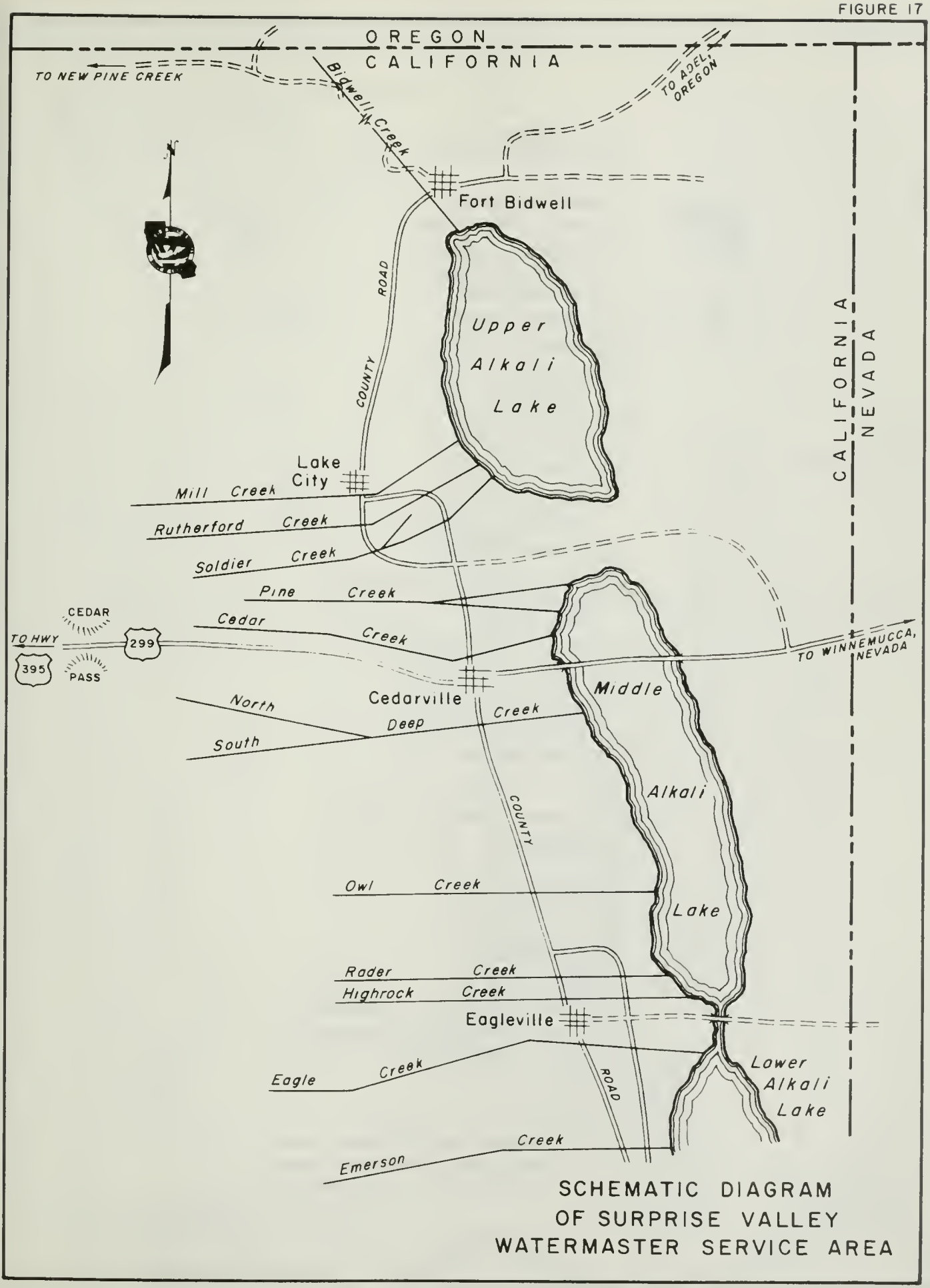
TABLE 51

EMERSON CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		18*	21	20	7.8	4.4	3.4	1
2		18	22	20	8.4	4.4	3.4	2
3		16	24	20	7.8	3.9	3.4	3
4		16	26	19	7.8	3.9	3.4	4
5		16	28	19	7.8	3.9	3.4	5
6		14	29	19	7.8	3.9	3.4	6
7		12	31	19	7.2	3.9	3.4	7
8		11	33	19	7.2	3.9	3.4	8
9		10	35	19	7.2	3.9	3.4	9
10		9.0	35	19	6.6	3.9	3.4	10
11		9.6	34	18	6.6	3.9	3.4	11
12		11	33	17	6.6	4.4	3.4	12
13		11	32	16	6.6	3.9	3.4	13
14		11	31	16	6.6	3.9	3.4	14
15		9.6	30	16	6.1	3.9	3.4	15
16		9.0	29	16	5.5	3.9	3.4	16
17		11	29	16	5.5	3.9	3.4	17
18		13	28	16	4.9	4.4	3.4	18
19		15	28	16	4.9	3.9	3.9	19
20		17	26	15	4.9	3.9	3.9	20
21		19	26	15	4.4	3.4	3.9	21
22		22	26	14	4.4	3.4	3.4	22
23		21	27	14	4.4	3.4	3.4	23
24		20	28	12	4.4	3.4	3.4	24
25		19	28	12	4.4	3.4	3.4	25
26		19	28	11	4.4	3.4	3.4	26
27		19	26	11	4.4	3.4	3.4	27
28		18	24	9.0	4.4	3.4	3.4	28
29		18	22	8.4	4.4	3.4	3.4	29
30		19	21	8.4	4.4	3.4	3.4	30
31			20		4.4	3.4		31
Mean		15.0	27.7	15.7	5.9	3.8	3.4	Mean
Runoff In Acre-Feet		895	1710	932	361	233	205	Runoff In Acre-Feet

* Beginning of Record

FIGURE 17



SCHEMATIC DIAGRAM
OF SURPRISE VALLEY
WATERMASTER SERVICE AREA

△ Permanent Recorder Station

March 15 through July 9
(major season of use)

(5) G. Peterson 0.38 cfs
C. Bucher 0.45 cfs
Sweeney 0.07 cfs

(6) Sweeney 0.18 cfs

(7) G. Peterson 0.50 cfs

(8) McConnaughy 7.24 cfs*
Town Users 0.06 cfs

(9) Conlon 7.63 cfs
Town Users 0.22 cfs

(10) Carey 6.13 cfs
C. Bucher 0.66 cfs
P. Peterson 0.44 cfs
Town Users 0.30 cfs

(11) C. Bucher 0.38 cfs

(12) U.S. Indian Service 0.46 cfs
Green 0.14 cfs
Baty 0.12 cfs

(13) McConnaughy 5.24 cfs*
Town Users 0.44 cfs

(15) Fee 8.94 cfs
Sagehorn 1.34 cfs
O'Callaghan 2.88 cfs
Toney 0.42 cfs

(17) Kober 0.05 cfs

(20) Sagehorn 0.88 cfs

(19A) (20) (20A) Carey 1.43 cfs

(21) Sagehorn 1.39 cfs

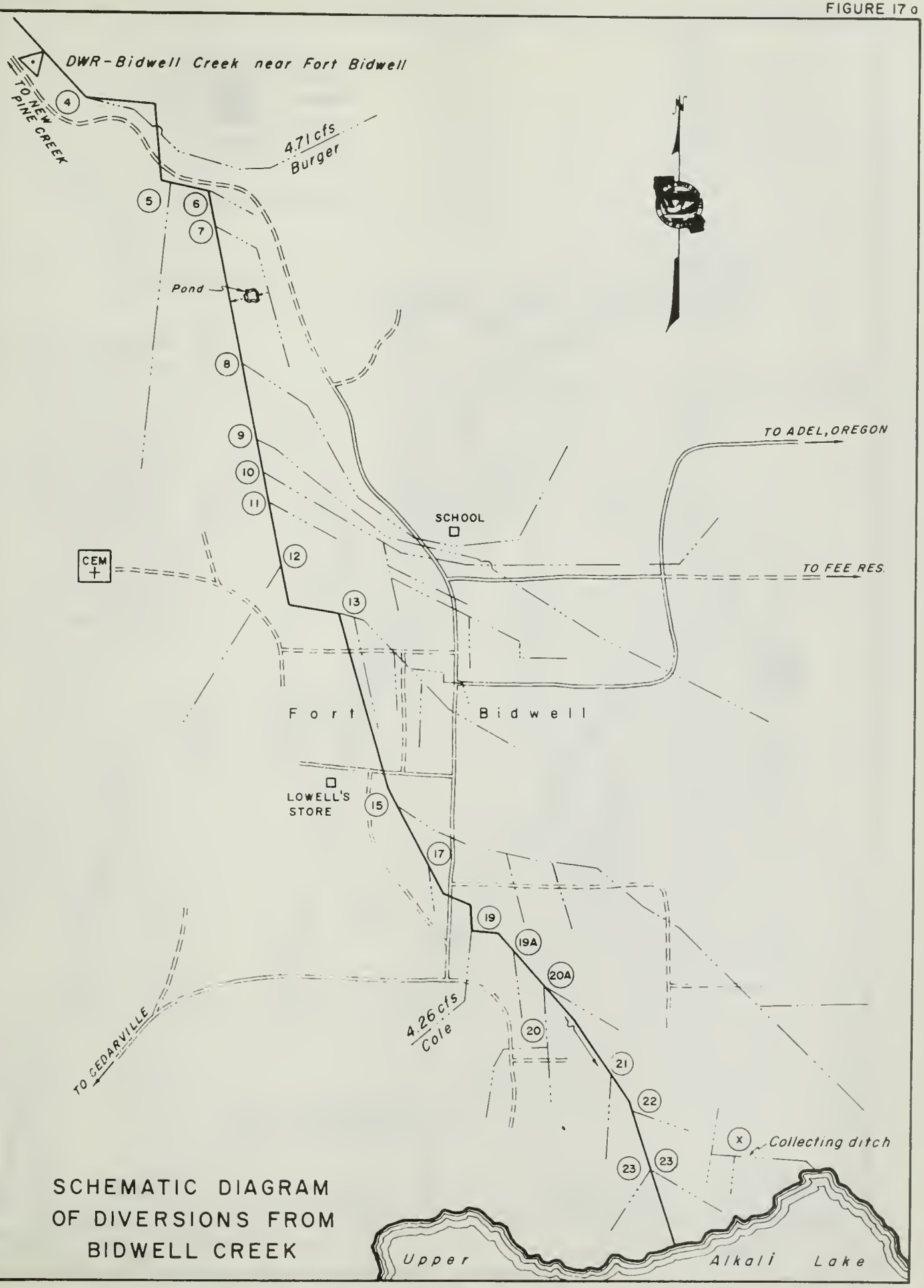
(22) O'Callaghan 0.38 cfs

(23) Sagehorn 1.79 cfs

(X) Sagehorn — If flow is less than 3.82 cfs, deficiency is made up by additional diversion through (15) if Fee Ranch allotment is satisfied.

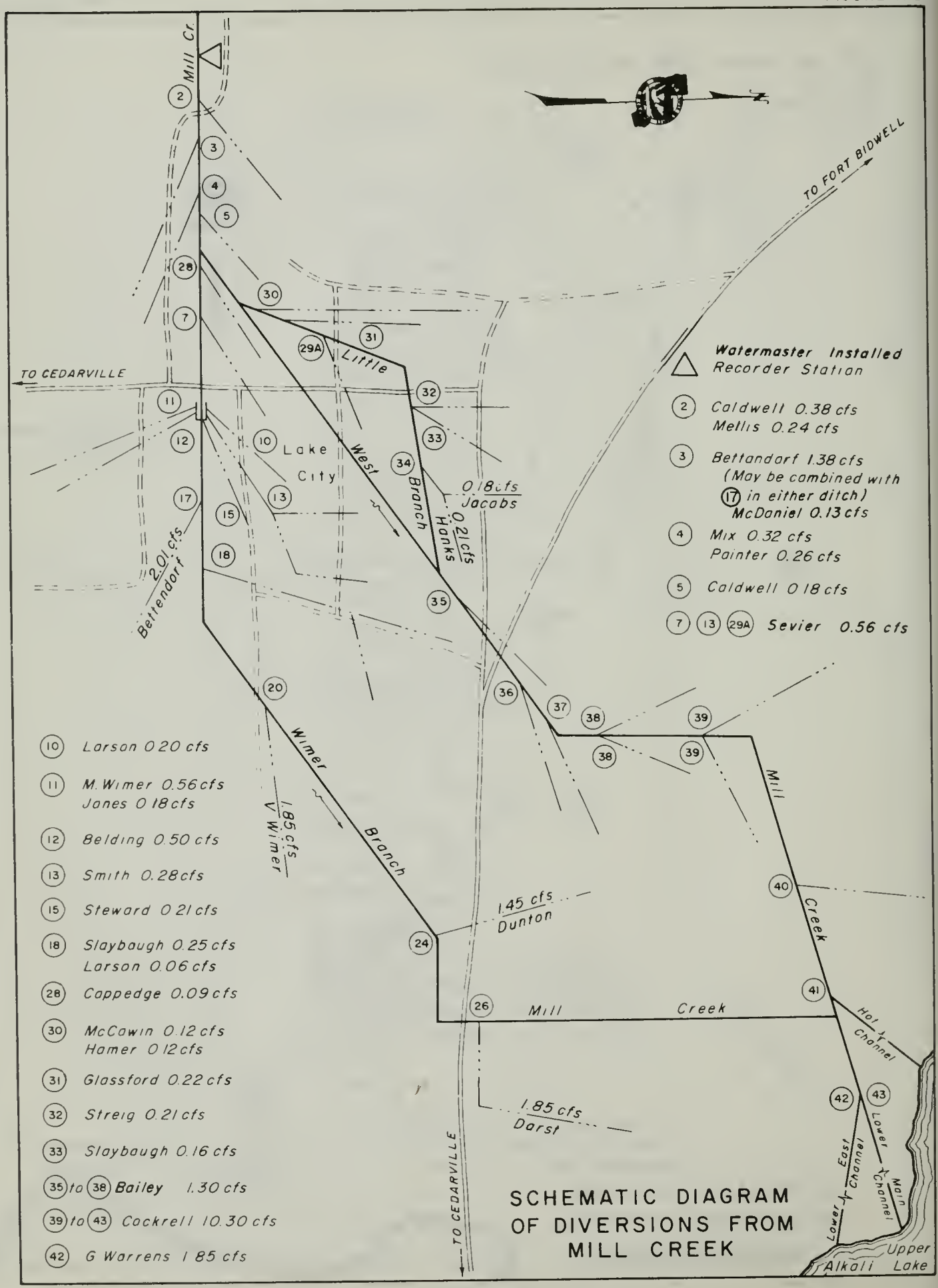
* May be used in either ditch

NOTE: Sagehorn and O'Callaghan waters may be used in any of their ditches at discretion of user and watermaster.

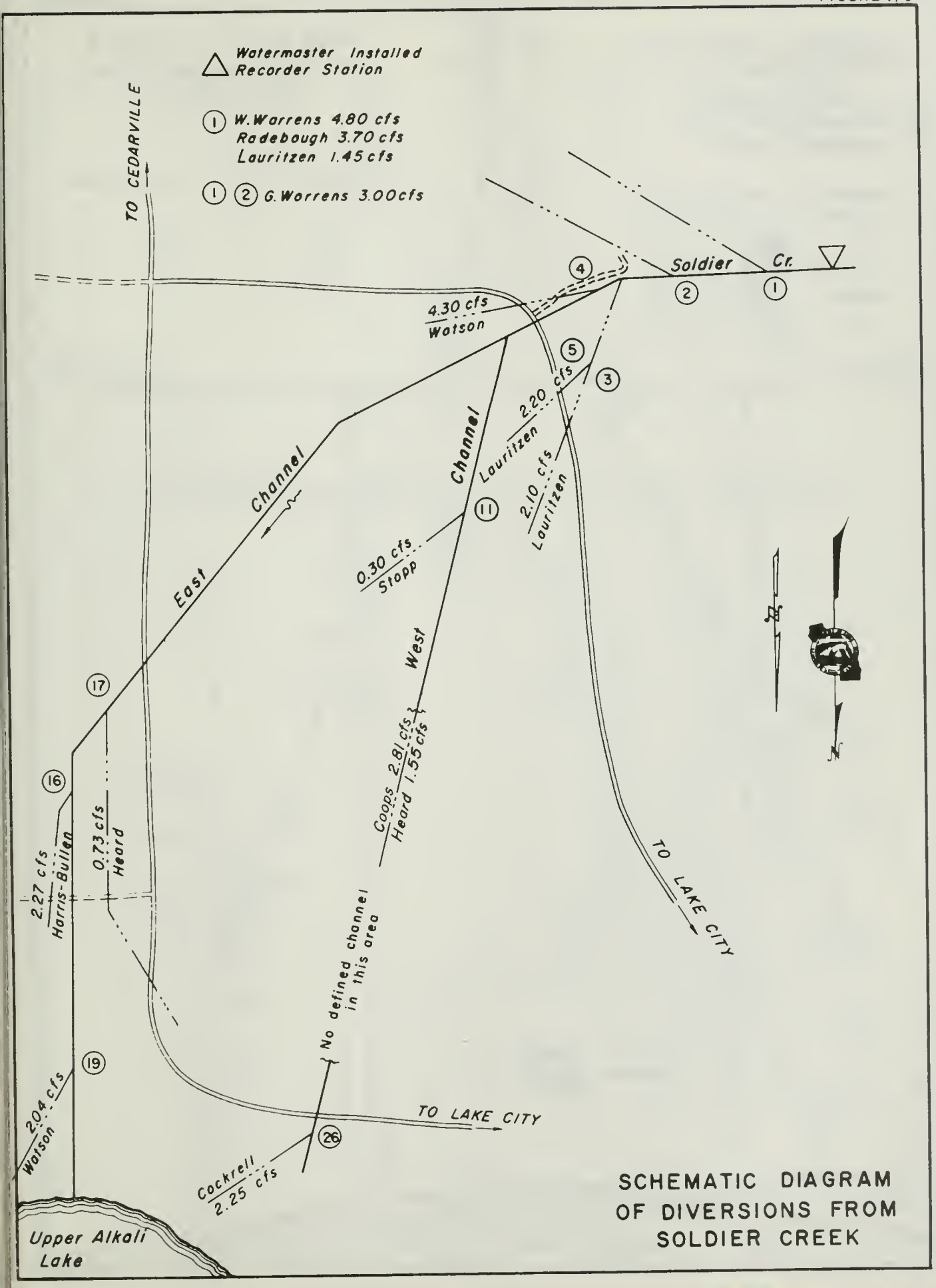


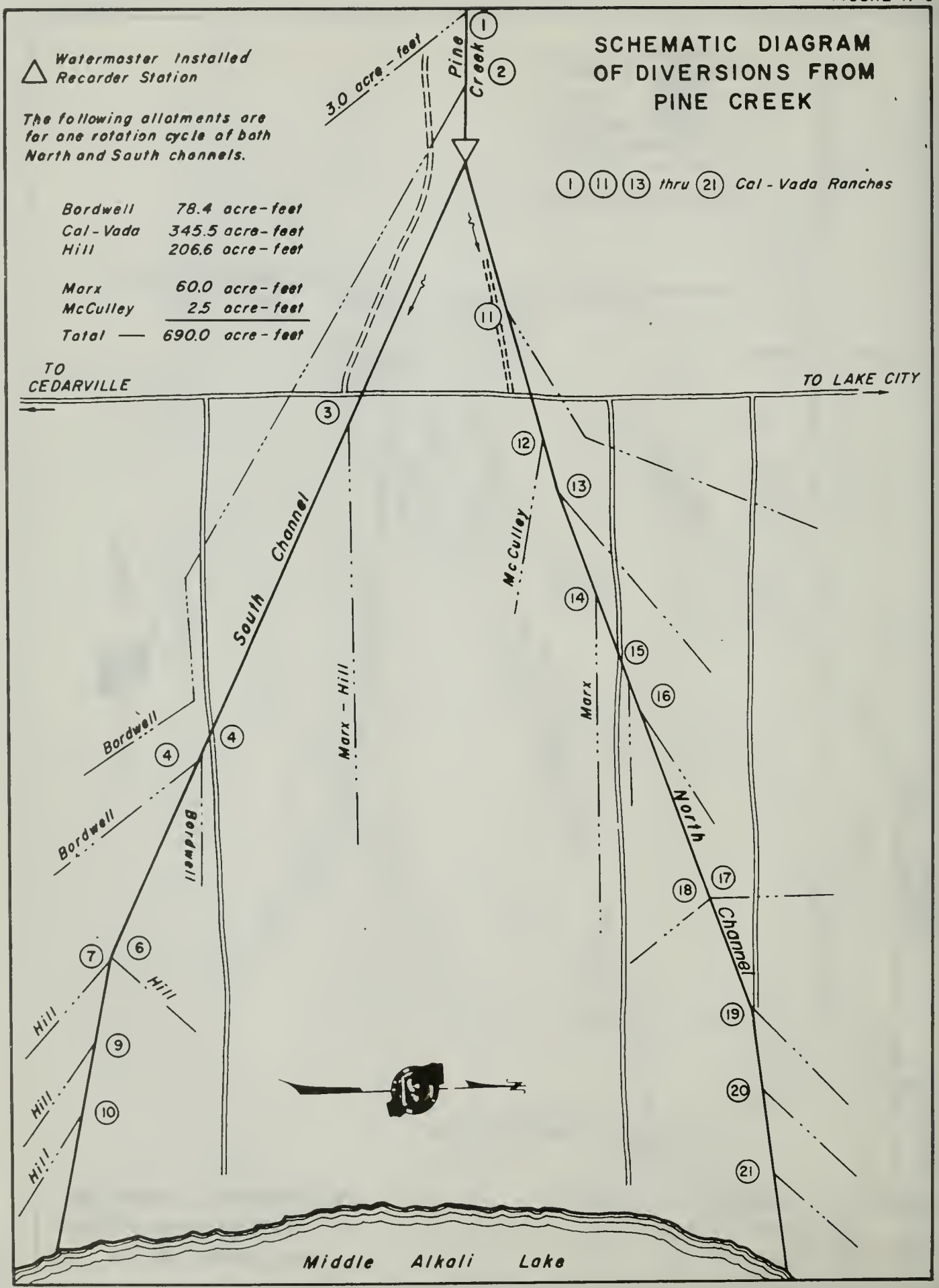
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIDWELL CREEK

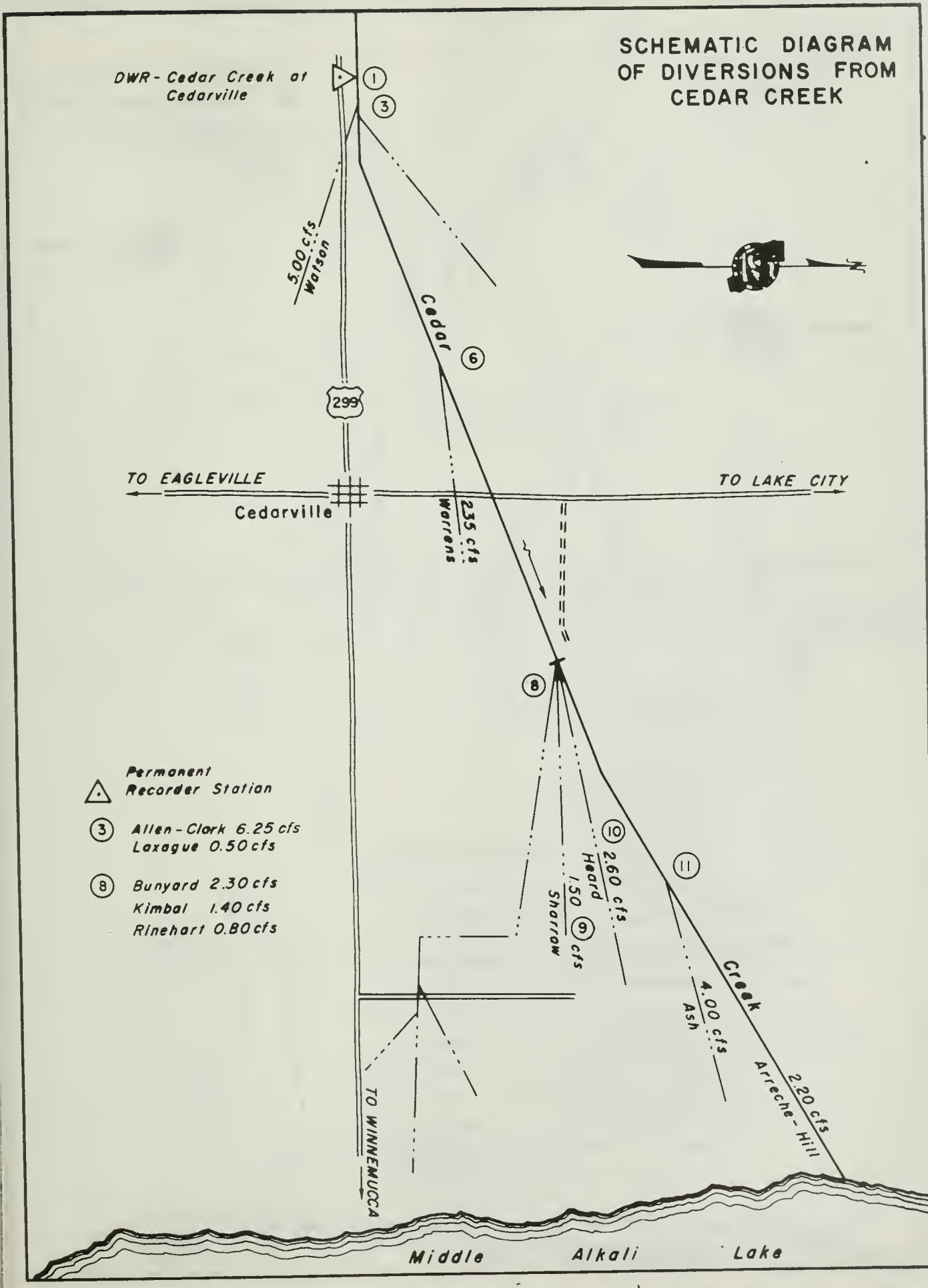
FIGURE 17b

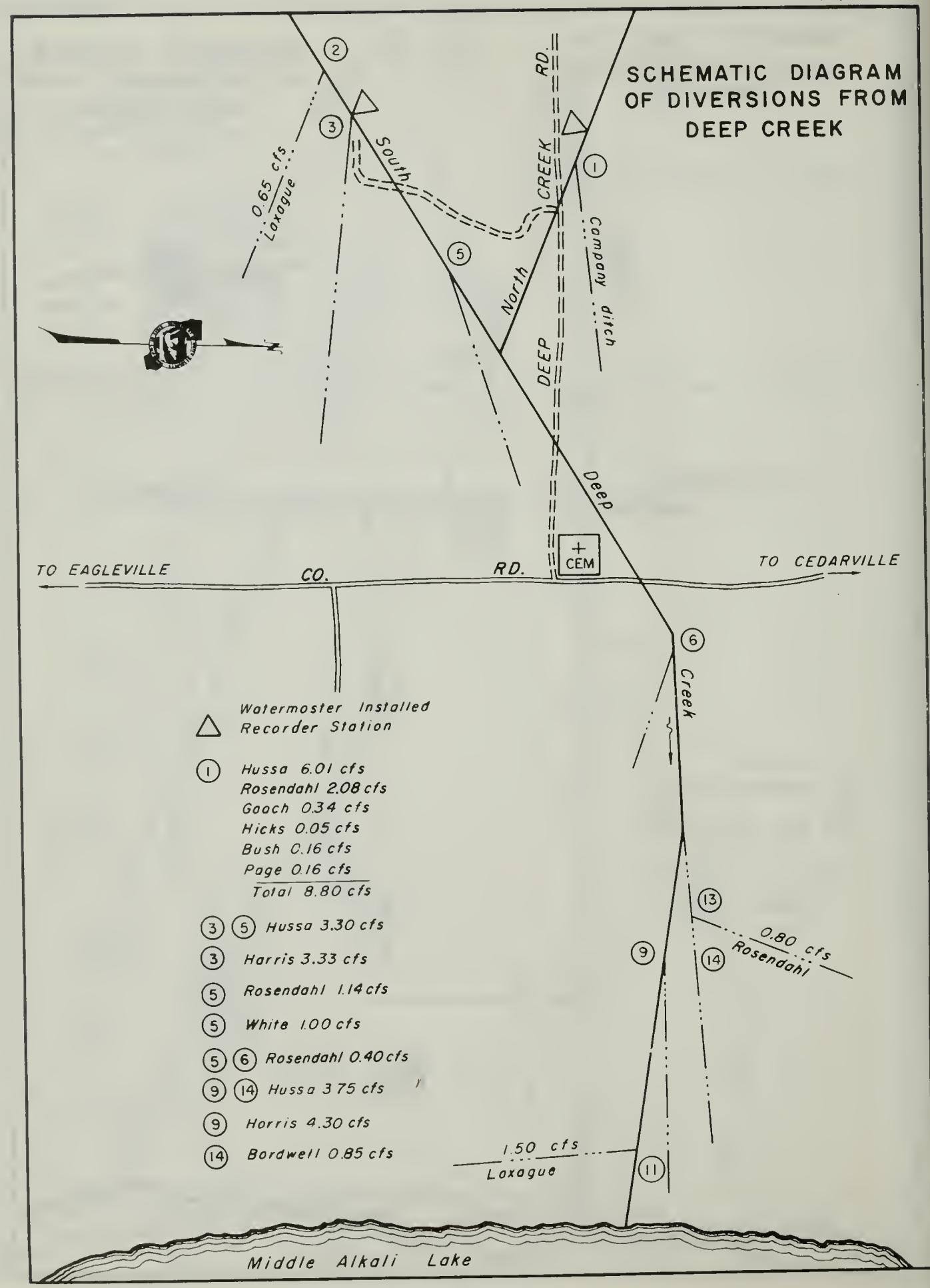


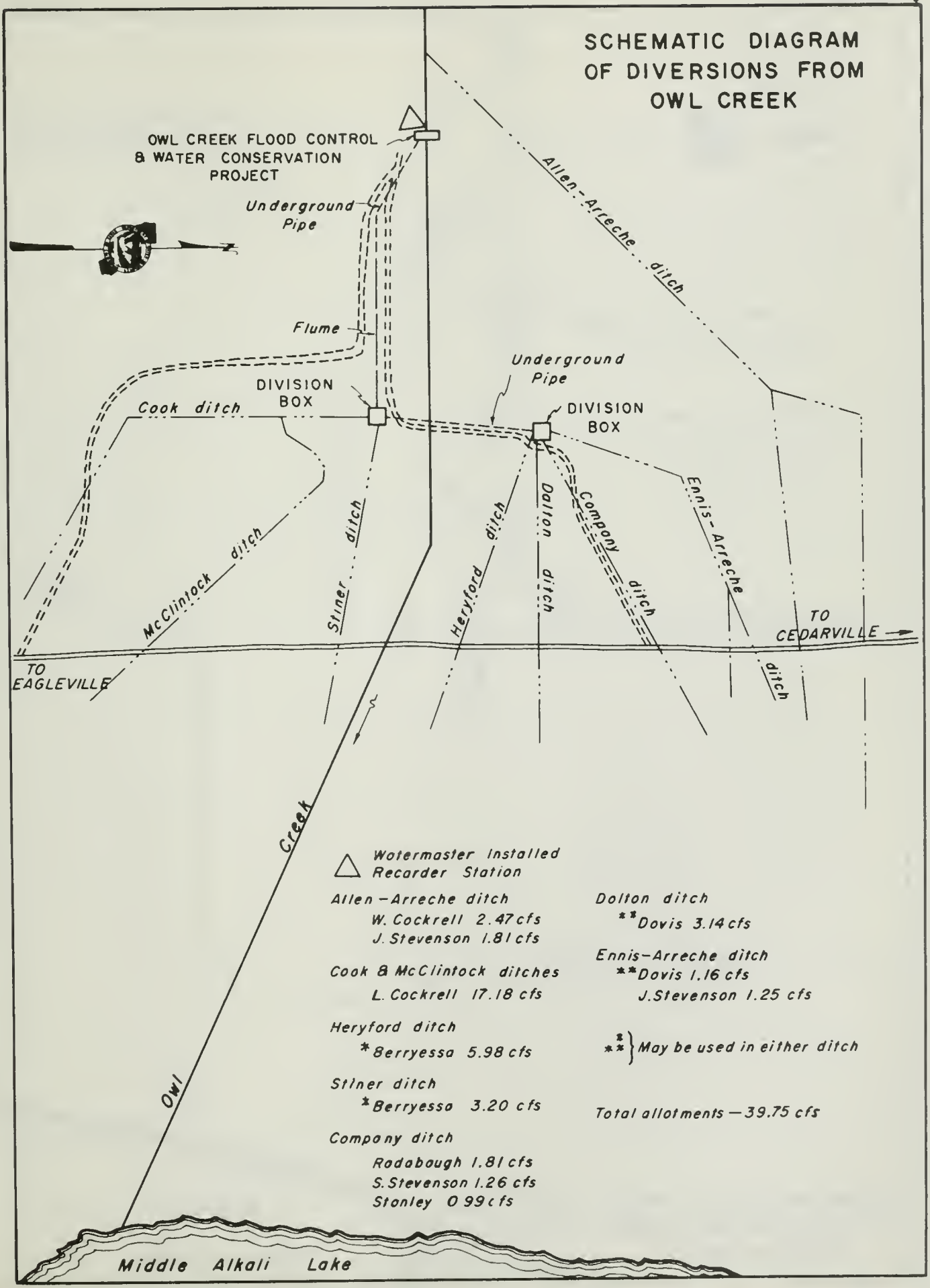
SCHEMATIC DIAGRAM OF DIVERSIONS FROM MILL CREEK

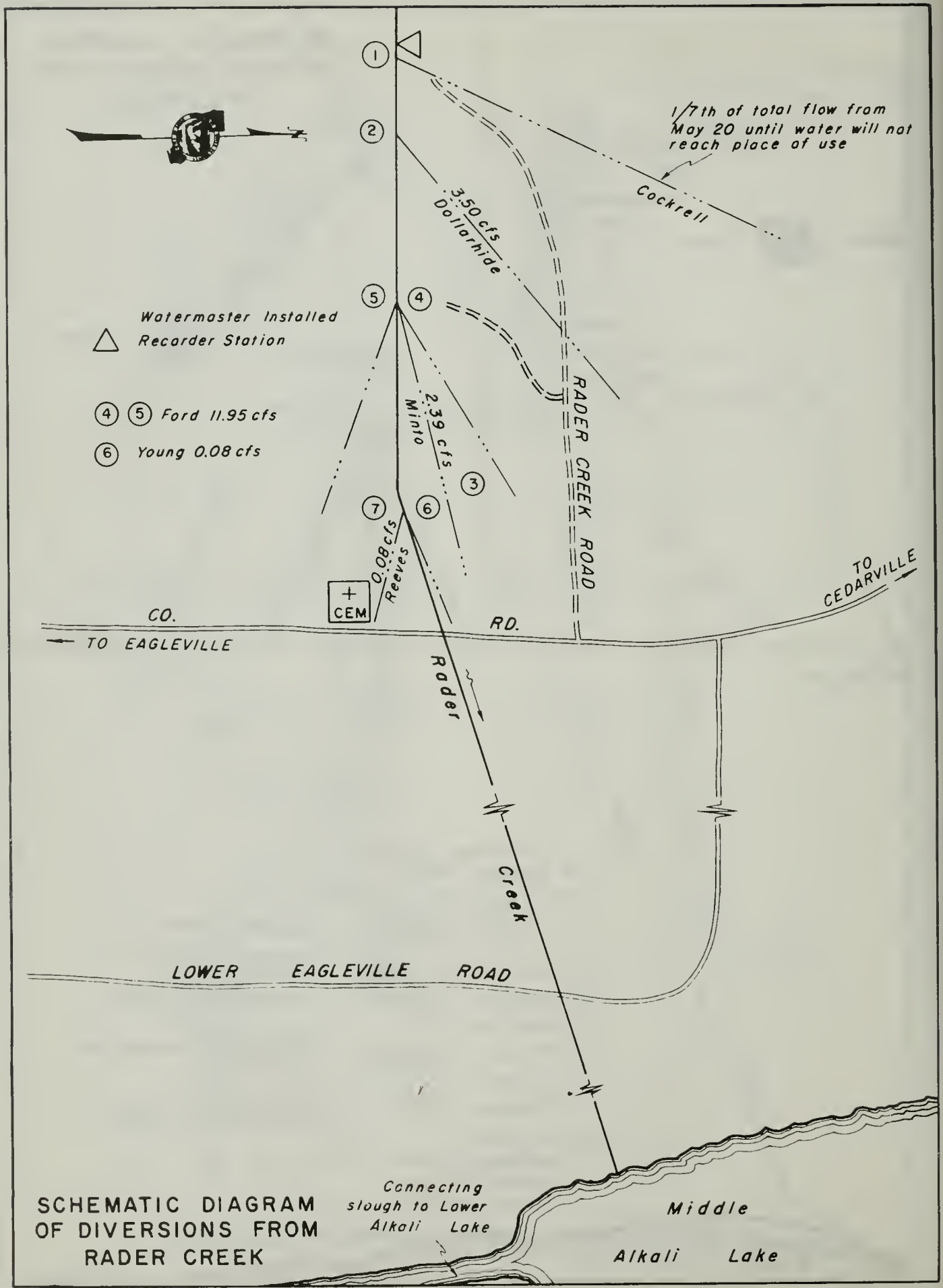

Watermaster Installed Recorder Station
(1) W. Warrens 4.80 cfs
Radebough 3.70 cfs
Lauritzen 1.45 cfs
(1) (2) G. Warrens 3.00 cfs
TO CEDARVILLE
Soldier Cr.
4.30 cfs Watson
2.20 cfs Lauritzen
2.10 cfs Lauritzen
East Channel
West Channel
0.30 cfs Stopp
Coops 2.81 cfs
Heard 1.55 cfs
2.27 cfs Harris-Bullen
0.73 cfs Heard
No defined channel in this area
TO LAKE CITY
TO LAKE CITY
2.04 cfs Watson
Cockrell 2.25 cfs
Upper Alkali Lake
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOLDIER CREEK


SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK
Watermaster Installed Recorder Station
The following allotments are for one rotation cycle of both North and South channels.
Bordwell 78.4 acre-feet
Cal-Vada 345.5 acre-feet
Hill 206.6 acre-feet
Marx 60.0 acre-feet
McCulley 2.5 acre-feet
Total — 690.0 acre-feet
1 11 13 thru 21 Cal-Vada Ranches
3.0 acre-feet
Pine Creek
TO CEDARVILLE
TO LAKE CITY
South Channel
McCulley
Marx - Hill
Marx
North Channel
Bordwell
Hill
Middle Alkali Lake

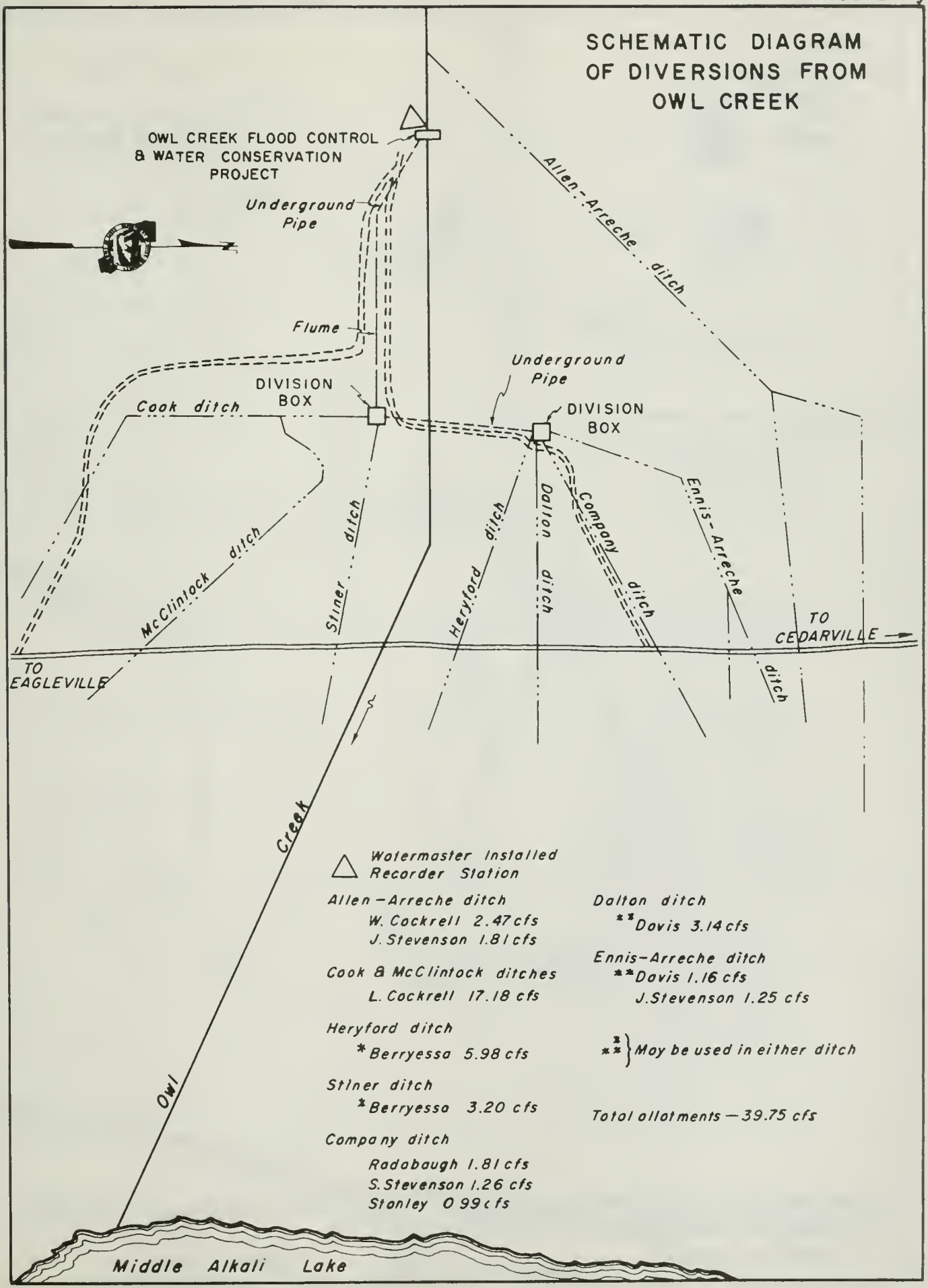

SCHEMATIC DIAGRAM OF DIVERSIONS FROM CEDAR CREEK
DWR - Cedar Creek at Cedarville
1
3
500 c.f.s. Watson
Cedar
6
299
TO EAGLEVILLE
TO LAKE CITY
Cedarville
235 c.f.s. Warrens
8
Permanent Recorder Station
3 Allen - Clark 6.25 cfs
Laxague 0.50 cfs
8 Bunyard 2.30 cfs
Kimbal 1.40 cfs
Rinehart 0.80 cfs
10
2.60 c.f.s. Heard
1.50 c.f.s. Sharrow
9
11
4.00 c.f.s. Ash
Creek
2.20 c.f.s. Arreche - Hill
TO WINNEMUCCA
Middle Alkali Lake

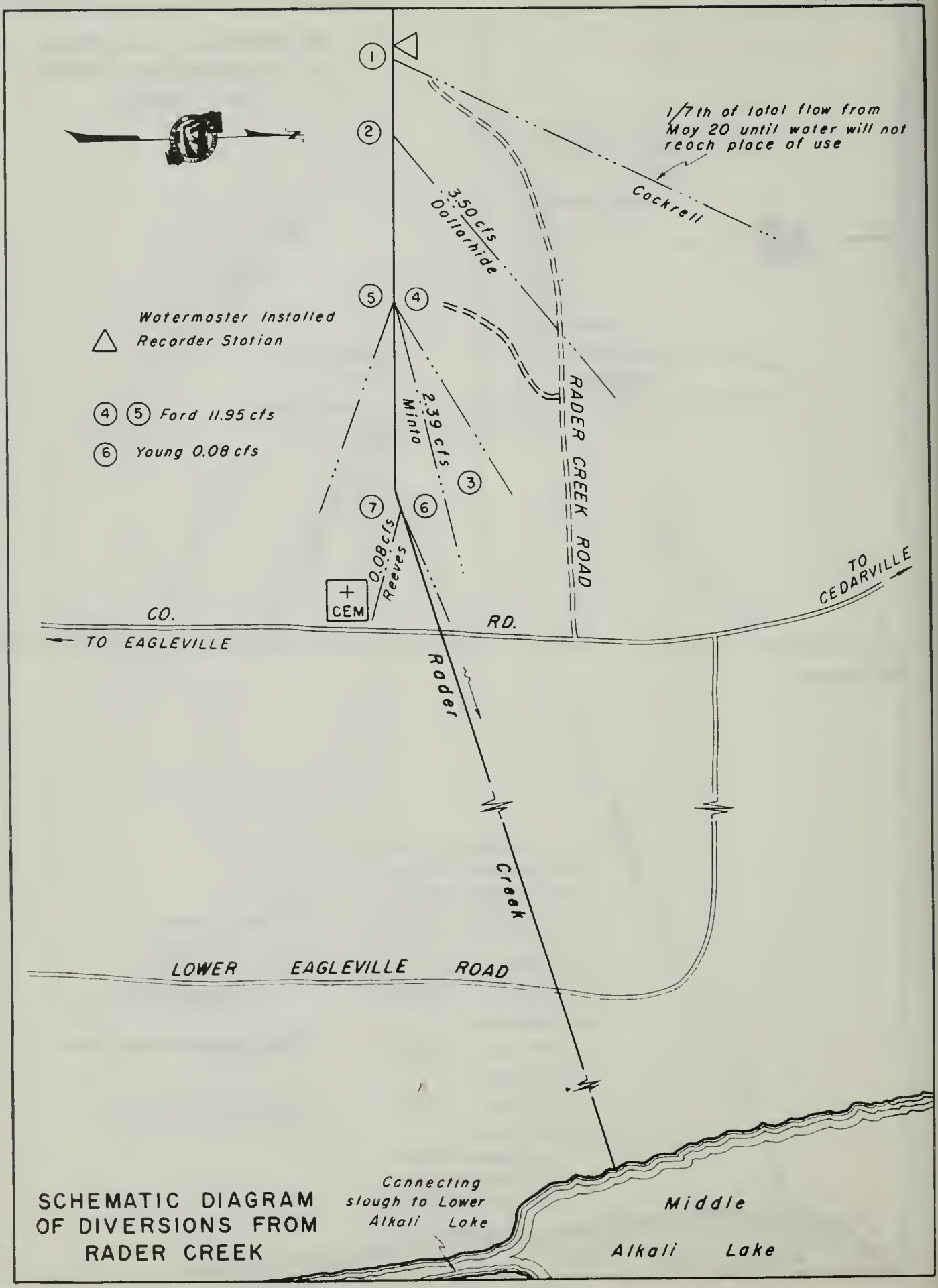

SCHEMATIC DIAGRAM OF DIVERSIONS FROM DEEP CREEK
RD.
South
CREEK
North
DEEP
Deep
Company ditch
0.65 cfs
Laxague
TO EAGLEVILLE
CO.
RD.
CEM
TO CEDARVILLE
Creek
Watermoster Installed
Recorder Station
① Hussa 6.01 cfs
Rosendahl 2.08 cfs
Gooch 0.34 cfs
Hicks 0.05 cfs
Bush 0.16 cfs
Page 0.16 cfs
Total 8.80 cfs
③ ⑤ Hussa 3.30 cfs
③ Harris 3.33 cfs
⑤ Rosendahl 1.14 cfs
⑤ White 1.00 cfs
⑤ ⑥ Rosendahl 0.40 cfs
⑨ ⑭ Hussa 3.75 cfs
⑨ Horris 4.30 cfs
⑭ Bordwell 0.85 cfs
0.80 cfs
Rosendahl
1.50 cfs
Laxague
Middle Alkali Lake


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
OWL CREEK
OWL CREEK FLOOD CONTROL
& WATER CONSERVATION
PROJECT
Underground
Pipe
Allen-Arreche ditch
Flume
Underground
Pipe
DIVISION
BOX
DIVISION
BOX
Cook ditch
McClintock ditch
Stiner ditch
Heryford ditch
Dalton ditch
Company ditch
Ennis-Arreche
ditch
TO
CEDARVILLE
TO
EAGLEVILLE
Owl
Creek
Middle Alkali Lake
Watermaster Installed
Recorder Station
Allen-Arreche ditch
W. Cockrell 2.47 cfs
J. Stevenson 1.81 cfs
Cook & McClintock ditches
L. Cockrell 17.18 cfs
Heryford ditch
* Berryessa 5.98 cfs
Stiner ditch
* Berryessa 3.20 cfs
Company ditch
Rodabough 1.81 cfs
S. Stevenson 1.26 cfs
Stonley 0.99 cfs
Dolton ditch
** Dovis 3.14 cfs
Ennis-Arreche ditch
** Dovis 1.16 cfs
J. Stevenson 1.25 cfs
*, ** May be used in either ditch
Total allotments — 39.75 cfs



SCHEMATIC DIAGRAM OF DIVERSIONS FROM RADER CREEK


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
OWL CREEK
OWL CREEK FLOOD CONTROL
& WATER CONSERVATION
PROJECT
Underground
Pipe
Allen-Arreche ditch
Flume
Underground
Pipe
DIVISION
BOX
Cook ditch
DIVISION
BOX
McClintock ditch
Stiner ditch
Heryford ditch
Dalton ditch
Company ditch
Ennis-Arreche
TO
CEDARVILLE
TO
EAGLEVILLE
ditch
Owl Creek
Watermaster Installed
Recorder Station
Allen-Arreche ditch
W. Cockrell 2.47 cfs
J. Stevenson 1.81 cfs
Cook & McClintock ditches
L. Cockrell 17.18 cfs
Heryford ditch
* Berryessa 5.98 cfs
Stiner ditch
* Berryessa 3.20 cfs
Company ditch
Rodabaugh 1.81 cfs
S. Stevenson 1.26 cfs
Stanley 0.99 cfs
Dalton ditch
** Davis 3.14 cfs
Ennis-Arreche ditch
** Davis 1.16 cfs
J. Stevenson 1.25 cfs
* ** } May be used in either ditch
Total allotments — 39.75 cfs
Middle Alkali Lake


1/7th of total flow from May 20 until water will not reach place of use
Cockrell
3.50 cfs Dollarhide
Watermaster Installed Recorder Station
4 5 Ford 11.95 cfs
6 Young 0.08 cfs
2.39 cfs Minto
RADER CREEK ROAD
0.08 cfs Reeves
CEM
TO CEDARVILLE
CO. RD.
TO EAGLEVILLE
Rader Creek
LOWER EAGLEVILLE ROAD
Connecting slough to Lower Alkali Lake
Middle Alkali Lake
SCHEMATIC DIAGRAM OF DIVERSIONS FROM RADER CREEK

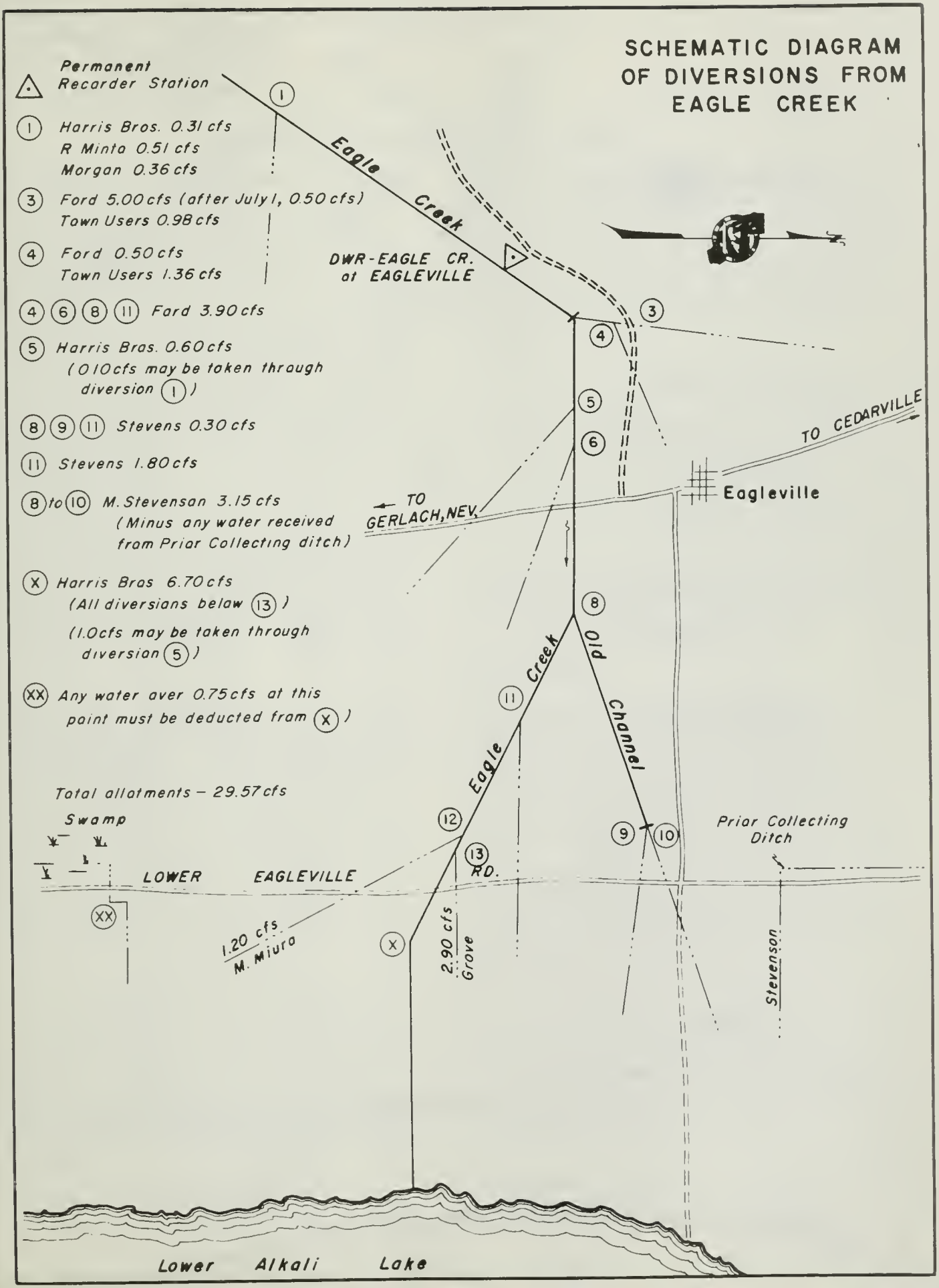
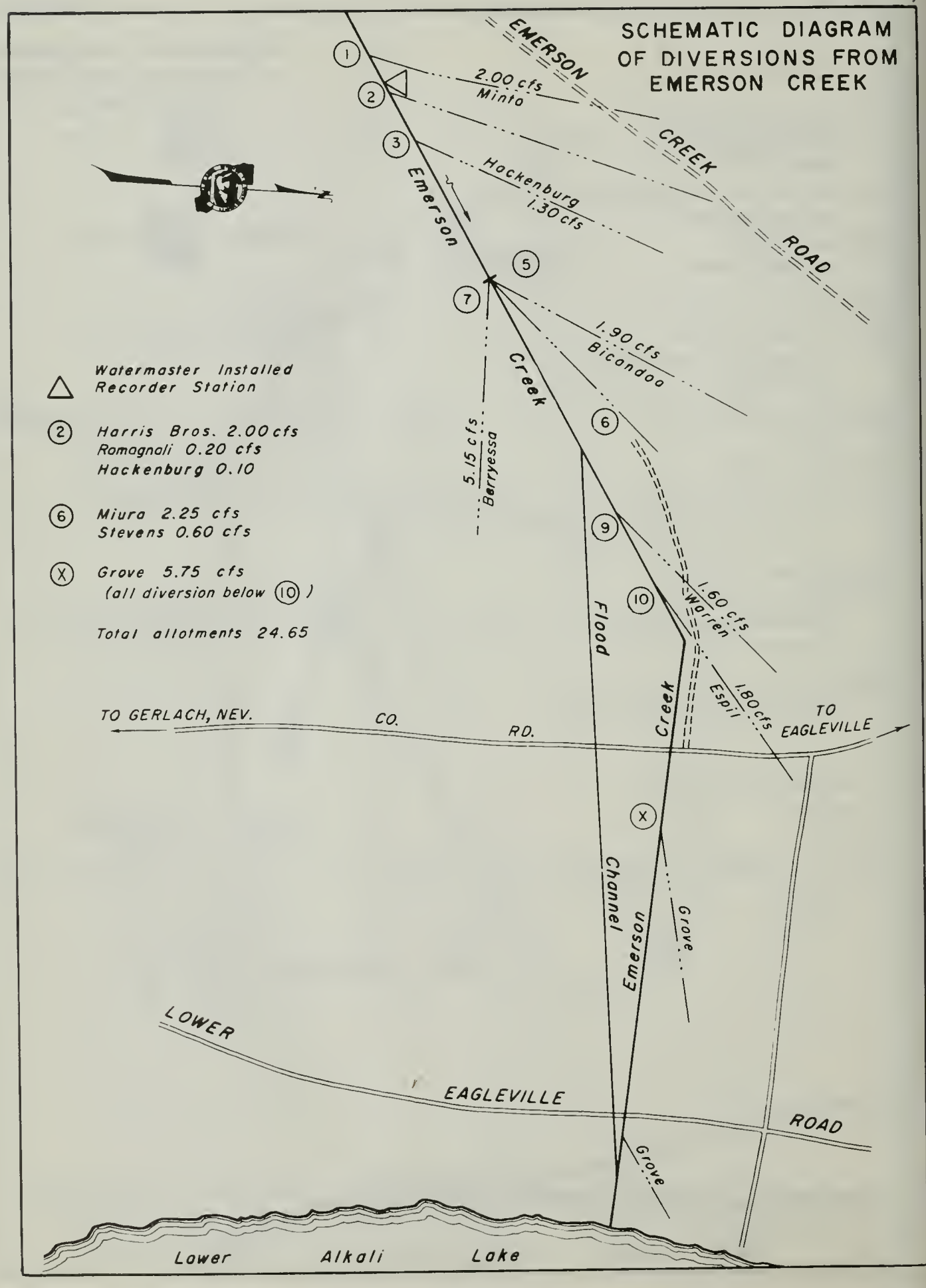

SCHEMATIC DIAGRAM OF DIVERSIONS FROM EAGLE CREEK
Permanent Recorder Station
(1) Harris Bros. 0.31 cfs
R Minto 0.51 cfs
Morgan 0.36 cfs
(3) Ford 5.00 cfs (after July 1, 0.50 cfs)
Town Users 0.98 cfs
(4) Ford 0.50 cfs
Town Users 1.36 cfs
(4) (6) (8) (11) Ford 3.90 cfs
(5) Harris Bros. 0.60 cfs
(0.10 cfs may be taken through diversion (1))
(8) (9) (11) Stevens 0.30 cfs
(11) Stevens 1.80 cfs
(8) to (10) M. Stevenson 3.15 cfs
(Minus any water received from Prior Collecting ditch)
(X) Harris Bros 6.70 cfs
(All diversions below (13))
(1.0 cfs may be taken through diversion (5))
(XX) Any water over 0.75 cfs at this point must be deducted from (X))
Total allotments – 29.57 cfs
Eagle Creek
DWR-EAGLE CR. at EAGLEVILLE
TO CEDARVILLE
TO GERLACH, NEV.
Eagleville
Old Channel
Eagle Creek
Swamp
LOWER EAGLEVILLE
RD.
Prior Collecting Ditch
1.20 cfs M. Miura
2.90 cfs Grove
Stevenson
Lower Alkali Lake

FIGURE 17


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
EMERSON CREEK
EMERSON
CREEK
ROAD
2.00 cfs
Minto
Hackenburg
1.30 cfs
Emerson
Creek
1.90 cfs
Bicandoo
5.15 cfs
Berryessa
Flood
Creek
1.60 cfs
Warren
1.80 cfs
Espil
TO GERLACH, NEV.
CO.
RD.
TO
EAGLEVILLE
Channel
Emerson
Grove
Grove
LOWER
EAGLEVILLE
ROAD
Lower
Alkali
Lake
Watermaster Installed
Recorder Station
(2) Harris Bros. 2.00 cfs
Romagnali 0.20 cfs
Hackenburg 0.10
(6) Miura 2.25 cfs
Stevens 0.60 cfs
(X) Grove 5.75 cfs
(all diversion below (10))
Total allotments 24.65

Susan River Watermaster Service Area

The Susan River service area is located in the southern part of Lassen County in the vicinity of Susanville. There are 163 water right owners in the service area with total allotments of 351.732 cubic feet per second. The primary place of use is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a distance of about 25 miles. The valley floor is at an elevation of about 4,000 feet. The source of supply is comprised of three stream systems: Susan River and tributaries, Baxter Creek and tributaries, and Parker Creek.

Susan River originates on the east slope of the Sierra Nevada immediately east of Lassen National Park at an elevation of about 7,900 feet. Its channel runs easterly from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

Susan River has four major tributaries: Piute Creek, entering from the north at Susanville; Gold Run and Lassen Creeks, entering from the south between Susanville and Johnstonville; and Willow Creek, entering from the north above Standish. Gold Run and Lassen Creeks rise on the north slope of Diamond Mountain at an elevation of about 7,600 feet. The watersheds of Piute and Willow Creeks are on the south slopes of Round Valley Mountain at lower elevations.

A short distance below its confluence with Willow Creek the Susan River divides into three channels: Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Hartson Slough and Whitehead Slough divert from Dill Slough on its south bank farther downstream.

The Baxter Creek stream system is located in Honey Lake Valley on the east slope of the Sierra Nevada Mountains, about 10 miles southeast of Susanville. The principal creeks in the system are: Baxter Creek, which rises in the extreme western portion of the basin and flows in an easterly direction, and Elesian, Sloss, and Bankhead Creeks, which are tributaries of Baxter Creek from the south.

Parker Creek is situated in Honey Lake Valley on the east slope of the Sierra Nevada Mountains about 15 miles southeast of Susanville. It rises on the east slope of Diamond Mountain and flows in an easterly direction for about 5 miles into Honey Lake.

A schematic drawing of each major stream system within the Susan River service area is presented as Figures 18 through 18e, pages 147 through 154.

Water Supply

The water supply in the Susan River service area is obtained from two major sources, snowmelt runoff and springs. Snowpack on the Willow Creek Valley and Piute Creek watersheds, which embrace more than one-half of the Susan River stream system, melts early in the spring and is usually depleted by May 1. Irrigation requirements from this portion of the stream system are then almost entirely dependent on the flow of springs that are relatively constant throughout the year.

Under average flow conditions, Lassen, Gold Run, Baxter, and Parker Creeks, and Susan River above Susanville are sustained by snowmelt runoff until early June. The flow from perennial springs in this portion of the system is comparatively small.

The Lassen Irrigation District stores supplemental water in Hog Flat and McCoy Reservoirs, located on the

headwaters of the Susan River. This stored water is released into the Susan River Channel and commingled with the natural flow, usually during June and July. It is then rediverted into Lake Leavitt for further distribution by the irrigation district.

Records of daily mean discharge of the several stream gaging stations in the service area are presented in Tables 52 through 57, pages 144 through 146.

Methods of Distribution

Irrigation in the Susan River service area is accomplished by placing dams in the main channels, thus raising the water level for subsequent diversion into canals and ditches. These diversion dams are relatively large on the Susan River Channel and much smaller on the tributaries. Wild flooding is the most common method of irrigation in practice. Portions of the irrigated lands have been leveled, permitting a more efficient use of water by using border checks and furrows. Subirrigation occurs in some areas incidental to surface irrigation or as a result of seepage from ditches and creek channels.

The Lassen Irrigation Company is entitled to divert or store up to the present capacity of its reservoirs from the natural flow of Susan River between March 1 and July 1 of each year when the flow of Susan River immediately above Willow Creek is more than 5 cubic feet per second in spite of the allotments granted to users in Schedules 3 and 6 and to users of third priority class in Schedule 5 of the Susan River decree. When the flow of the Susan River immediately above Willow Creek is below the required amount, the watermaster then measures the inflow to McCoy Flat Reservoir, and if available, releases the amount required. A transportation loss of 15 percent, or a minimum of two cubic feet per second, is deducted from all water that is transferred from Lassen Irrigation Company upstream storage reservoirs to Lake Leavitt.

The several decrees (see Table 1) which apply to the Susan River service area establish the following number of priority classes for the major stream systems and distribution areas: Baxter Creek - five; Parker Creek - four; Gold Run Creek - three; Lassen Creek - two; Piute and Hills Creek - one; Willow Creek - two; and Susan River - three. Geographical features are such that the Susan River, Willow Creek and Lower Susan River areas are subject to interrelated priorities.

1969 Distribution

Watermaster service began in the Susan River service area on April 1 and continued until September 30. Lester Lighthall, Water Resources Technician II, was watermaster during this period.

The available natural water supply throughout the service area was well above average. Snow survey measurements showed about 200 percent of normal for the Susan River watershed. Many ranchers in the area reported an above-average hay crop, with some getting as many as four cuttings of alfalfa.

Parker Creek. The available water supply in Parker Creek was sufficient to satisfy all allotments (four priorities) until July 1. From July 1 to July 20 the flow decreased rapidly to first priority allotments. From July 20 throughout the remainder of the season only first priority allotments were served.

Baxter Creek. The available water supply was sufficient to satisfy third priority allotments (a total of five priorities) until June 16. The flow decreased from June 26 to July 7 when approximately 50 percent of second priority allotments were supplied. The flow at Diversion No. 75 dropped to 1.0 cubic foot per second on August 20. In

accordance with the decree, all of the flow at this point was diverted into Long ditch for stockwater use. From August 20 throughout the remainder of the season only stockwater allotments were served.

Lassen-Holtzclaw Creeks. The available water supply in Lassen-Holtzclaw Creeks was sufficient to meet all allotments (two priorities) until July 12. The flow decreased to first priority allotments on August 15. From August 15 throughout the remainder of the season the Tangeman Ranch was entitled to all of the water available in the stream.

Hills Creek. The available water supply in Hills Creek was sufficient to supply all allotments (one priority) until July 19. After that date the flow decreased until by August 27, and continuing until September 30, only stockwater was available to the Amesbury Ranch. Storage facilities on the creek, filled by the spring runoff, showed no appreciable depletion until the middle of June.

Gold Run Creek. The available water supply in Gold Run Creek was sufficient to supply all allotments (three priorities) until July 20. Between July 21 and August 9, the flow decreased steadily. After August 10 the flow remained reasonably constant at about 10 percent of second priority allotments.

Piute Creek. The available water supply in Piute Creek was sufficient to satisfy all allotments (one priority) and provide a small surplus flow to the Susan River throughout the season.

Willow Creek. The available water supply in Willow Creek was sufficient to supply all allotments (two priorities) throughout the season. Heavy growth of moss, weeds, etc., in the creek caused an annual drainage problem during the haying season. With the aid of chemicals and two pumps, this problem has been reduced considerably.

Susan River. The available water supply in the Susan River was sufficient to supply all allotments in Schedule 6 (three priorities) until June 26. As the flow receded, Schedule 6 was terminated for the season. All allotments in Schedule 3 (two priorities - Lower Susan River area) were satisfied until mid-July. Throughout the remainder of the season there was enough water for about 55 percent of second priority allotments in this schedule.

All allotments in Schedule 5 (three priorities - Upper Susan River area) were satisfied until June 30. The flow receded until August 26 when there was enough water for about 15 percent of the second priority allotments. Throughout the remainder of the season the flow remained constant.

Lassen Irrigation Company Reservoirs. The Susan River decree allows the Lassen Irrigation Company's McCoy Flat and Lake Levitt Reservoirs to store surplus water during the winter and spring months. Once filled, or if a shortage occurs among downstream water right owners, the natural flow in the Susan River above McCoy Flat Reservoir must be released.

During spring runoff the above reservoirs filled to capacity. Shortages began to occur in early July, so controlled releases began on July 3. The company requested that their required releases (equal to the inflow) from McCoy Flat Reservoir be made from their downstream Hog Flat Reservoir instead. This arrangement was acceptable. The company added this amount to their normal Hog Flat Reservoir releases which transfer water to Lake Leavitt during the winter months.

SUSAN RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 52

SUSAN RIVER AT SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1	59	730	817	248	32	61	6.5	1
2	53	568	798	250	30	64	29	2
3	55	476	774	239	28	60	53	3
4	54	456	674	235	36	57	59	4
5	53	512	677	228	48	53	56	5
6	57	432	752	213	51	50	62	6
7	53	376	837	196	47	48	58	7
8	53	364	903	232	46	41	55	8
9	49	376	971	237	62	37	56	9
10	52	392	1010	210	85	32	57	10
11	59	432	1040	219	88	29	58	11
12	52	500	1150	196	85	26	57	12
13	47	500	1120	180	82	25	57	13
14	46	448	1010	176	81	22	56	14
15	49	388	910	166	79	19	57	15
16	63	396	838	152	91	18	33	16
17	85	439	808	144	102	17	15	17
18	102	553	778	104	101	15	11	18
19	99	510	718	90	99	14	11	19
20	99	537	650	78	97	13	10	20
21	98	608	476	65	96	12	11	21
22	125	704	400	59	94	9.9	10	22
23	166	719	351	56	105	8.1	9.7	23
24	170	605	330	53	104	6.5	9.3	24
25	186	523	285	48	102	6.5	8.6	25
26	228	492	270	46	99	6.7	7.9	26
27	300	479	285	44	99	6.6	7.4	27
28	396	534	250	42	97	6.7	7.4	28
29	480	822	224	40	96	6.7	7.4	29
30	605	847	230	36	72	6.7	7.1	30
31	862		243		63	6.4		31
Mean	157	524	664	143	77.3	25.2	31.4	Mean
Runoff In Acre-Feet	9630	31180	40820	8490	4750	1550	1870	Runoff In Acre-Feet

TABLE 53

GOLD RUN CREEK NEAR SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1		88*	78	107	9.1	3.0	1.2	1
2		78	69	100	9.0	3.0	1.2	2
3		31	61	94	8.8	2.8	1.2	3
4		27	40	88	8.8	2.8	1.2	4
5		26	52	88	8.7	2.5	1.2	5
6		25	100**	76	8.7	2.5	1.2	6
7		22		76	8.6	2.5	1.2	7
8		18		69	8.6	2.4	1.2	8
9		18		60	8.8	2.4	1.1	9
10		18		39	8.0	2.1	1.1	10
11		19		42	7.1	2.1	1.1	11
12		25		36	7.0	2.0	1.1	12
13		29		31	6.8	2.0	1.1	13
14		29		34	6.8	2.0	1.1	14
15		26		29	6.2	2.0	1.1	15
16		25		25	6.0	2.0	1.1	16
17		31		23	6.0	2.0	1.1	17
18		61		23	5.5	2.0	1.1	18
19		60		21	5.3	2.0	1.1	19
20		71		18	5.0	1.7	1.1	20
21		107		17	4.7	1.7	1.1	21
22		150		16	4.3	1.4	1.1	22
23		120		15	4.3	1.4	1.1	23
24		71		15	4.2	1.4	1.1	24
25		39		14	4.1	1.4	1.1	25
26		29		13	3.9	1.4	1.1	26
27		19		12	3.9	1.4	1.2	27
28		31		11	3.5	1.2	1.2	28
29		64		10	3.5	1.2	1.2	29
30		83		10	3.4	1.2	1.2	30
31					3.2	1.2		31
Mean		48.0		40.4	6.2	2.0	1.1	Mean
Runoff In Acre-Feet		2860		2400	380	120	68	Runoff In Acre-Feet

* Beginning of Record
** End of Record

SUSAN RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 54

SUSAN RIVER AT JOHNSTONVILLE BRIDGE

Day	March	April	May	June	July	August	September	Day
1		*			24	3.2	0.9	1
2					21	4.3	0.8	2
3					14	4.0	3.0	3
4					12	3.5	1.8	4
5					24	2.3	1.0	5
6					25	3.5	1.0	6
7					30	3.4	0.9	7
8					28	3.3	0.9	8
9					30	3.2	0.9	9
10					26	3.1	0.8	10
11					26	3.0	0.9	11
12					19	2.9	0.9	12
13					15	2.8	0.9	13
14					16	2.7	0.9	14
15					18	2.6	0.9	15
16					11	2.5	0.9	16
17					12	2.4	1.0	17
18					14	2.3	1.0	18
19				100	13	2.2	0.9	19
20				90	13	2.1	0.9	20
21				80	12	2.0	0.9	21
22				71	8.2	1.9	0.9	22
23				62	11	1.8	0.7	23
24				54	6.1	1.7	0.7	24
25				46	9.0	1.6	0.8	25
26				44	24	1.5	0.8	26
27				36	37	1.4	0.9	27
28				36	35	1.3	0.9	28
29				37	28	1.2	1.0	29
30				30	11	1.0	1.0	30
31					7.5	1.0		31
Mean					18.7	2.4	1.0	Mean
Runoff In Acre-Feet					1150	150	59	Runoff In Acre-Feet

* Beginning of Record (Mean daily flow from April 1 to June 18 was in excess of 100 cfs).

TABLE 55

WILLOW CREEK NEAR SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1	60	299	60	13	14	24	10	1
2	58	225	55	13	14	23	10	2
3	56	198	53	13	14	23	10	3
4	54	170	55	13	16	21	10	4
5	55	185	51	13	20	21	10	5
6	54	169	47	13	20	19	10	6
7	53	149	45	13	20	19	10	7
8	54	140	43	13	26	18	10	8
9	51	134	42	15	25	18	10	9
10	50	124	42	16	27	18	10	10
11	51	115	42	16	25	16	10	11
12	50	110	45	16	24	15	10	12
13	53	109	49	15	25	15	10	13
14	49	105	41	15	25	15	10	14
15	47	100	36	19	24	14	10	15
16	47	90	36	20	24	13	10	16
17	57	87	35	19	24	12	10	17
18	95	89	32	18	23	12	11	18
19	118	84	30	18	22	13	11	19
20	123	82	28	17	22	13	13	20
21	120	81	27	17	23	12	13	21
22	168	78	26	16	23	12	13	22
23	213	76	25	15	23	12	14	23
24	228	86	24	15	23	12	14	24
25	254	82	22	14	23	12	14	25
26	294	76	21	14	23	12	14	26
27	328	73	21	15	23	12	15	27
28	351	70	20	15	24	11	15	28
29	360	68	19	14	24	11	15	29
30	365	64	15	14	24	11	15	30
31	365		14		24	11		31
Mean	138	117	35.5	15.2	22.3	15.2	11.6	Mean
Runoff In Acre-Feet	8490	6980	2180	906	1370	932	688	Runoff In Acre-Feet

SUSAN RIVER WATERMASTER SERVICE AREA

1969 Daily Mean Discharge in Cubic Feet Per Second

TABLE 56

WILLOW CREEK NEAR LITCHFIELD

Day	March	April	May	June	July	August	September	Day
1		*	78	18	19	30	18	1
2			73	18	20	29	17	2
3			68	18	20	28	17	3
4			73	17	20	28	17	4
5			68	18	24	28	17	5
6			60	19	26	28	17	6
7			56	19	26	27	17	7
8			54	19	27	27	17	8
9			52	21	31	26	17	9
10			52	21	31	25	17	10
11			52	22	29	24	17	11
12			54	22	29	23	17	12
13			60	21	30	22	17	13
14			53	20	29	22	17	14
15			46	23	29	21	17	15
16			45	26	29	20	17	16
17			44	25	29	19	17	17
18			42	23	29	18	18	18
19			38	22	28	19	19	19
20			35	22	28	19	20	20
21			34	21	28	19	21	21
22			32	20	29	18	21	22
23			31	20	29	18	21	23
24			30	20	29	18	21	24
25		102	28	18	29	19	21	25
26		96	28	18	29	18	21	26
27		90	27	18	29	19	21	27
28		87	26	19	29	19	21	28
29		86	25	19	30	19	21	29
30		82	20	18	30	19	21	30
31			19		30	18		31
Mean			45.3	20.2	27.5	22.2	18.6	Mean
Runoff In Acre-Feet			2780	1200	1690	1360	1100	Runoff In Acre-Feet

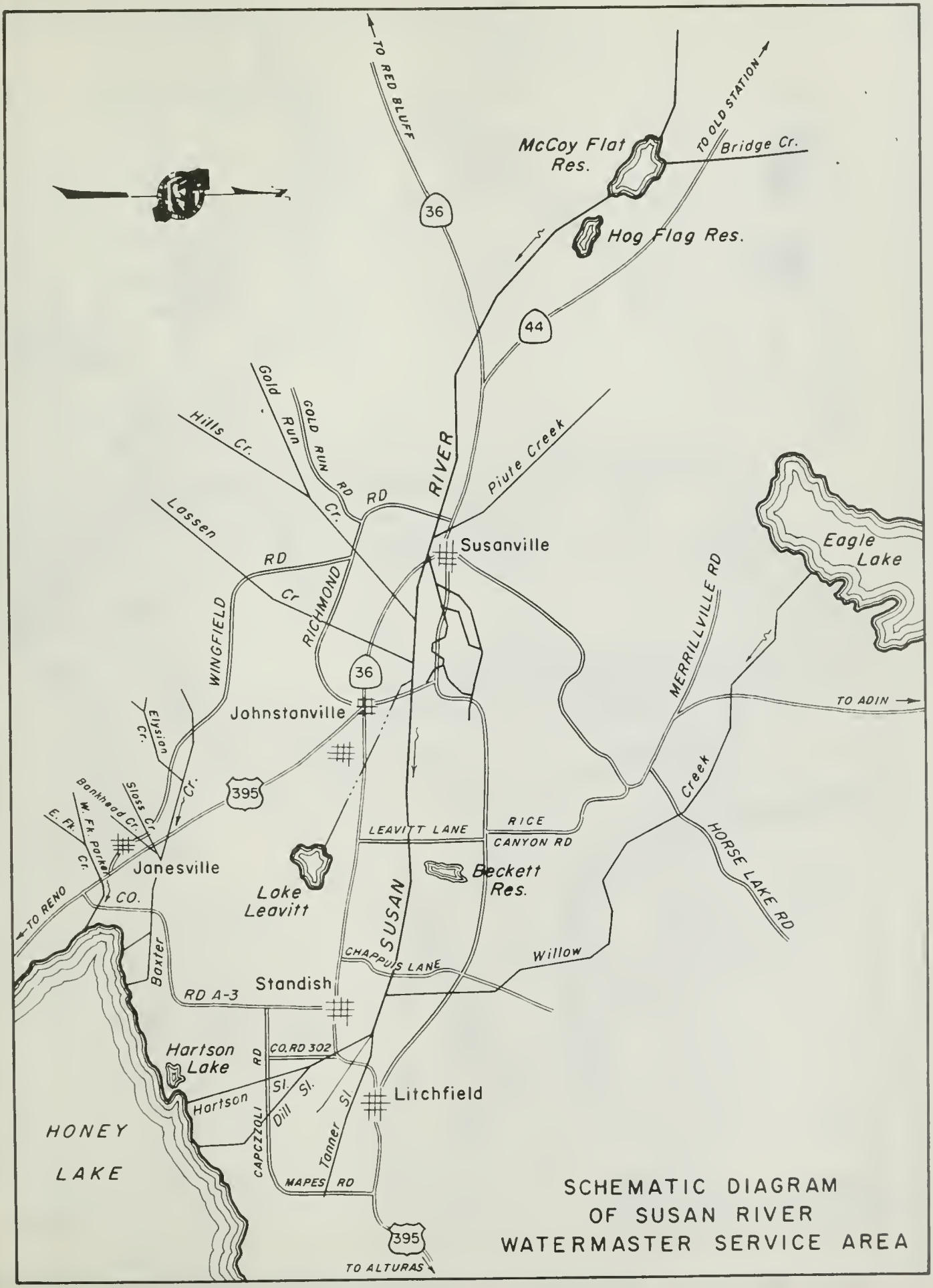
* Beginning of Record – Mean daily flow from April 1 to April 24 was in excess of 100 cfs

TABLE 57

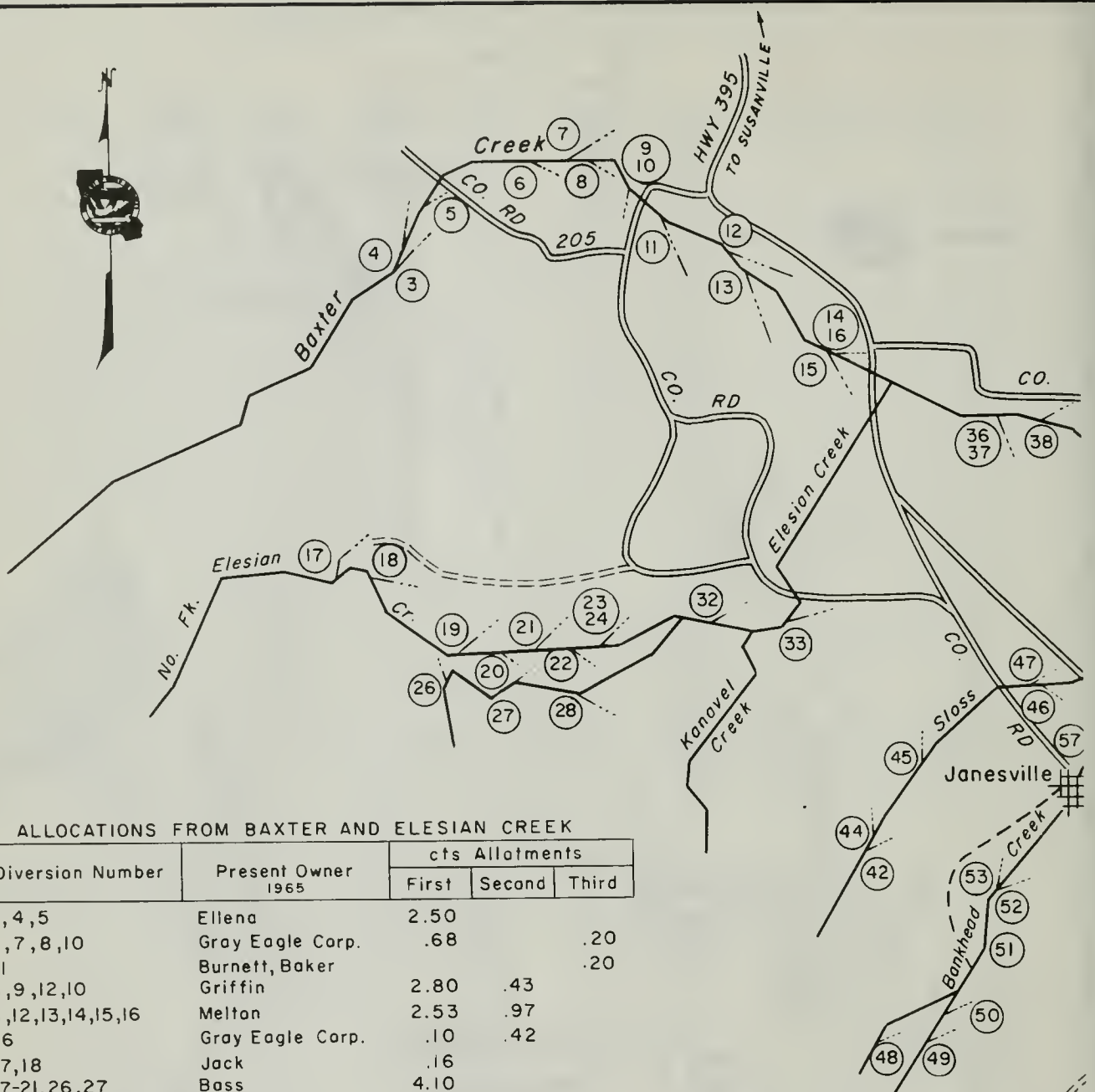
OPERATION OF McCOY AND HOG FLAT RESERVOIRS

Day	McCoy Flat Res. Releases to Susan River		Hog Flat Res. Releases to Susan River		Transfer of Lassen Irrig. Dist. Water from McCoy Flat and Hog Flat Res. to Lake Leavitt			Day
	July	September 3/	July	August	July	August	September	
1		28 1/		48		40	1.2 1/	1
2		51		46		38	35	2
3		54	10 1/	44		38	46	3
4		51	23	42		36	44	4
5		51	22	40		34	46	5
6		49	22	38		36	43	6
7		49	22	35		38	44	7
8		49	21	32		34	44	8
9		49	35	29		28	43	9
10		50	52	26	25 1/	25	44	10
11		49	52	23	37	23	45	11
12		49	51	21	47	20	45	12
13		49	51	19	47	18	46	13
14		49	50	16	42	16	45	14
15	11 1/	20 2/	50	14	38	14	43	15
16	25		49	12	42	12	14	16
17	25		49	10	47	11	3.5	17
18	25		48	8.6	49	9.5	3.2	18
19	25		48	6.4	45	8.1	2.6	19
20	25		47	5.5	42	6.2	1.0 2/	20
21	25		46	4.2	38	4.6		21
22	25		49	3.2	36	4.1		22
23	25		53	2.1	38	3.2		23
24	25		52	1.0	45	2.0		24
25	25		51	1.0 2/	27	1.0 2/		25
26	25		50		14			26
27	25		49		15			27
28	25		48		25			28
29	6.0 2/		47		40			29
30			46		32			30
31			45		62			31
Mean	22.8	46.5	42.7	21.1	37.9	20.0	31.9	Mean
Runoff In Acre-Feet	678	1380	2460	1040	1650	991	1270	Runoff In Acre-Feet

1/ Beginning of Releases 2/ End of Releases 3/ No Releases During August



SCHEMATIC DIAGRAM
OF SUSAN RIVER
WATERMASTER SERVICE AREA



ALLOCATIONS FROM BAXTER AND ELESIAN CREEK

Diversion Number	Present Owner 1965	cfs Allotments		
		First	Second	Third
3,4,5	Ellena	2.50		
6,7,8,10	Gray Eagle Corp.	.68		.20
11	Burnett, Baker			.20
8,9,12,10	Griffin	2.80	.43	
8,12,13,14,15,16	Melton	2.53	.97	
16	Gray Eagle Corp.	.10	.42	
17,18	Jack	.16		
17-21,26,27	Bass	4.10		
17,22;24,28,32,33	Kanavel	2.82		
17,22-24,28,32,33	Kanavel	4.58		
36-39	Peterson			1.42
70	Ahern	.02		
71,72	A & K Company	.02		1.69
81-83	A & K Company			2.88
78	A & K Company			1.05
73,75	Garza		.89	.28
74,76	Slippey		.98	
74,76	Hemphill		.98	
91-93	Bailey			3.02
75,77	Dieter		1.55	.40
75,77,80	Dieter		.30	
77-79	Mulroney		.90	.90
78	Mulroney			.67
78	Cummings			.15
85-89	Damon, McDonald			1.60
75,77,79,80	A & K Company		.64	
81,83	Blankenship			.50
84,90	Triami Cattle Co.			1.81

ALLOCATIONS FROM SLOSS AND BANKHEAD CREEKS

Diversion Number	Present Owner 1965	cfs Allotments			
		First	Second	Third	Total
42	Bowersox	.02			0.02
44	Thornton	.002			0.002
45	Speors			.08	0.08
46	Grover	.10	1.10		1.20
46,47	Peterson	.10	1.10		1.20
48,49,50	Row	.02	.13		0.15
51	Holmes Pipeline	.08		.11	0.19
52,53,55	Pyle			.48	0.48
56,62	Ashmore	.25	3.23		3.48
63,65	Thomasson	.05		.30	0.35
66,67	Fritts	.06		.20	0.26

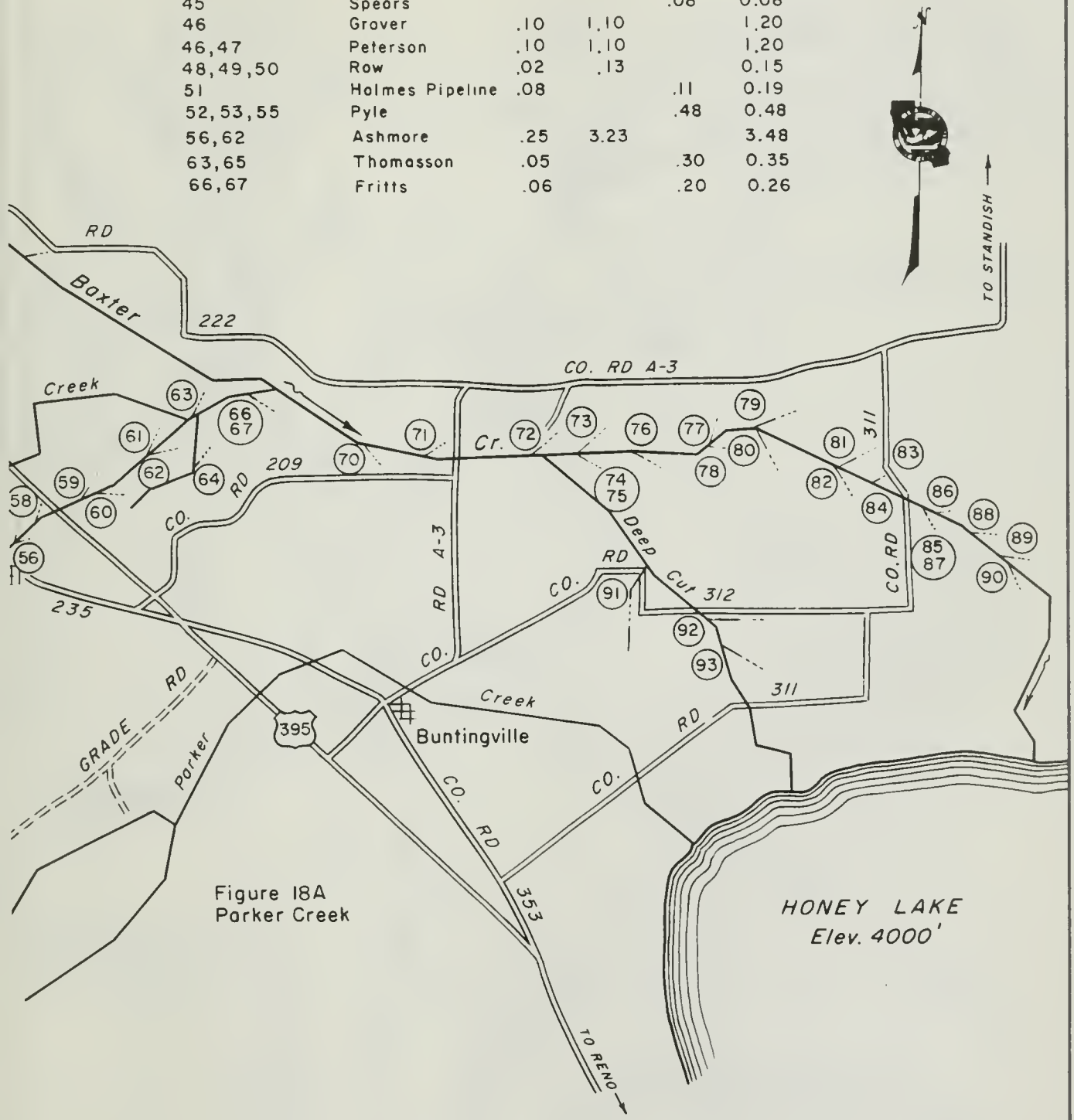
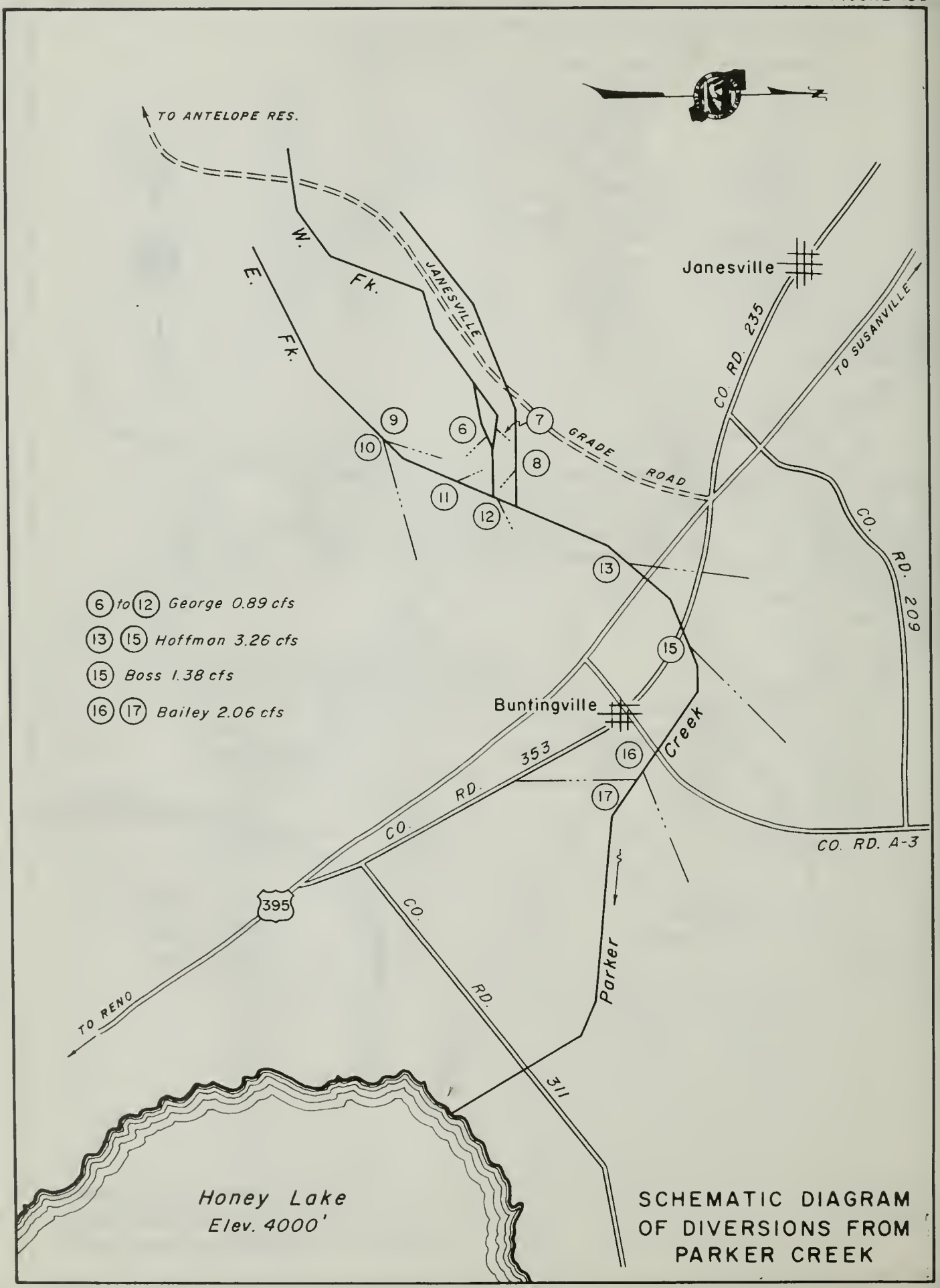


Figure 18A
Parker Creek

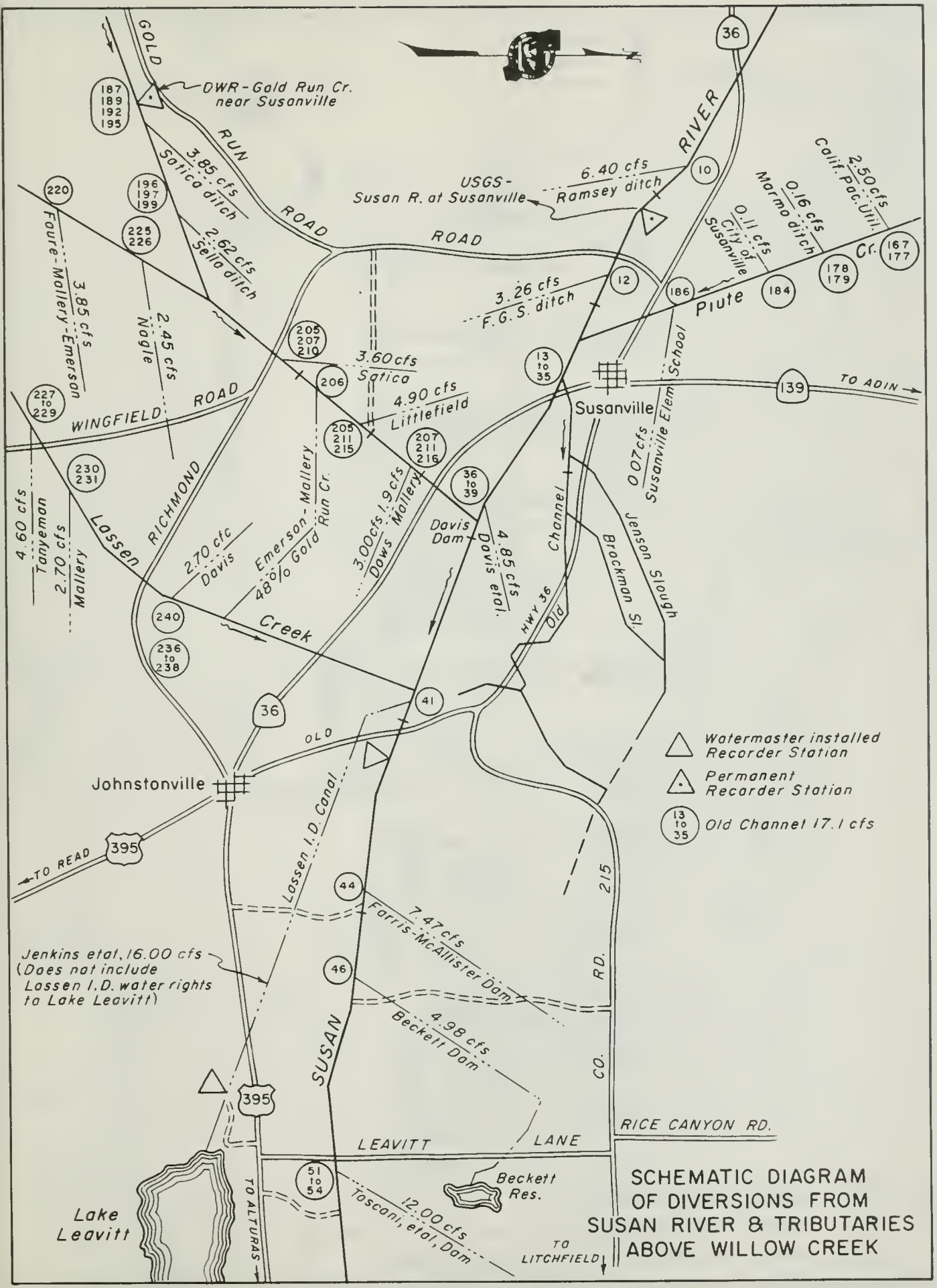
)PE RESERVOIR

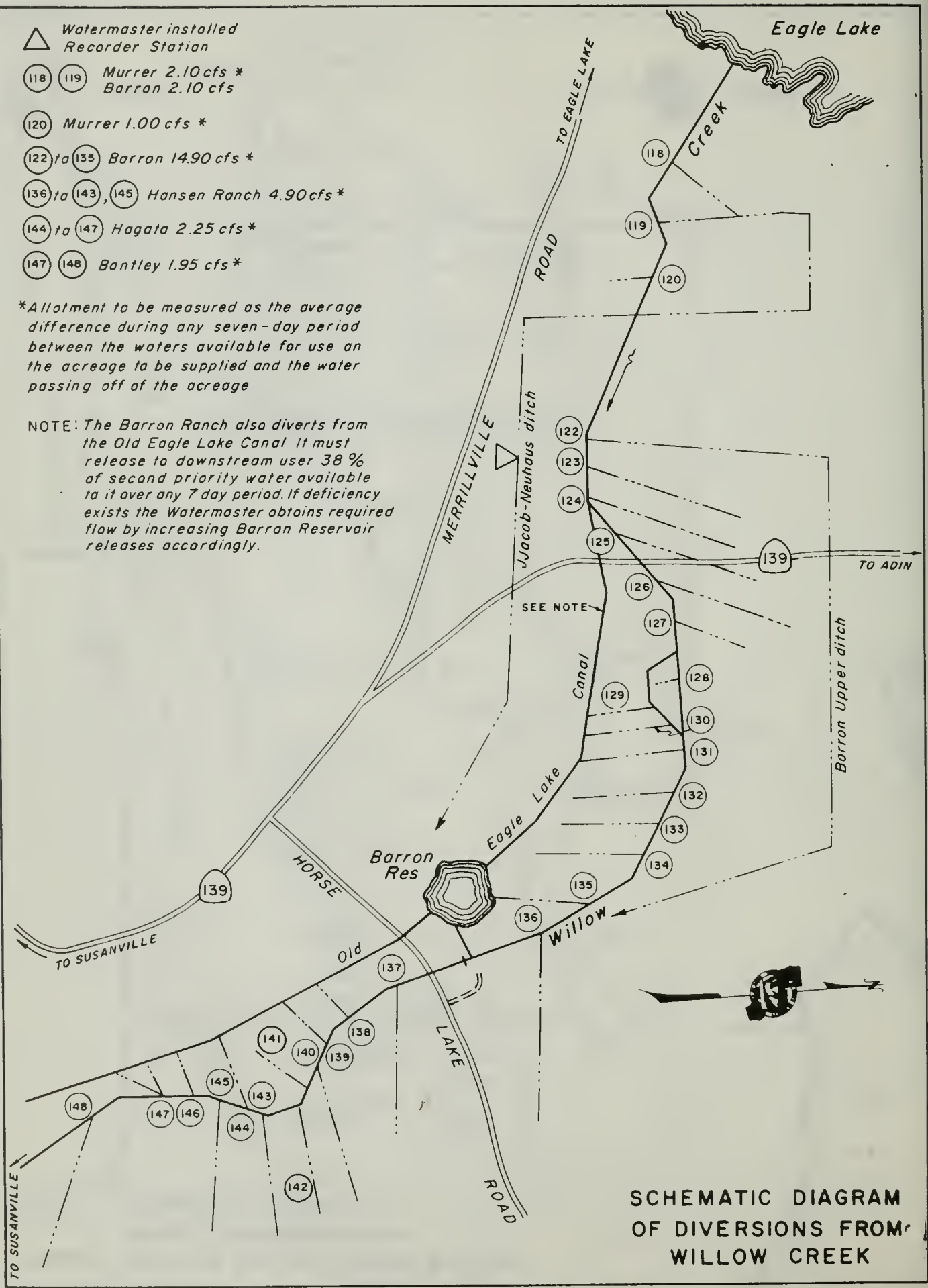
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BAXTER CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKER CREEK

FIGURE 18c


GOLD RUN
DWR - Gold Run Cr. near Susanville
187 189 192 195
3.85 cfs Sotica ditch
2.62 cfs Sella ditch
196 197 199
220
225 226
Faure-Mallery-Emerson 3.85 cfs
2.45 cfs Nagle
205 207 210
3.60 cfs Sotica
206
4.90 cfs Littlefield
227 to 229
WINGFIELD ROAD
205 211 215
207 211 216
230 231
RICHMOND ROAD
Lassen
4.60 cfs Tanyeman
2.70 cfs Mallery
2.70 cfs Davis
Emerson-Mallery 48% Gold Run Cr.
3.00 cfs 1.9 cfs Daws Mallery
Davis Dam
4.85 cfs Davis etal.
240
236 to 238
Creek
36
41
OLD
Johnstonville
TO READ
395
Lassen I.D. Canal
44
7.47 cfs Farris-McAllister Dam
Jenkins etal, 16.00 cfs (Does not include Lassen I.D. water rights to Lake Leavitt)
46
4.98 cfs Beckett Dam
SUSAN
395
LEAVITT LANE
RICE CANYON RD.
CO. RD. 215
51 to 54
Beckett Res.
12.00 cfs Toscani, etal, Dam
TO ALTURAS
TO LITCHFIELD
Lake Leavitt
USGS - Susan R. at Susanville
6.40 cfs Ramsey ditch
3.26 cfs F.G.S. ditch
12
10
36
RIVER
0.11 cfs City of Susanville
0.16 cfs Marmo ditch
2.50 cfs Calif. Pac. Util.
Cr.
167 177
178 179
186
184
Piute
13 to 35
Susanville
School
0.07 cfs Susanville Elem
139
TO ADIN
Channel
Brockman Sl.
Jenson Slough
HWY 36
Old
Watermaster installed Recorder Station
Permanent Recorder Station
13 to 35 Old Channel 17.1 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SUSAN RIVER & TRIBUTARIES ABOVE WILLOW CREEK


Watermaster installed Recorder Station
118 119 Murrer 2.10 cfs * Barron 2.10 cfs
120 Murrer 1.00 cfs *
122 to 135 Barron 14.90 cfs *
136 to 143, 145 Hansen Ranch 4.90 cfs *
144 to 147 Hagata 2.25 cfs *
147 148 Bantley 1.95 cfs *
*Allotment to be measured as the average difference during any seven-day period between the waters available for use on the acreage to be supplied and the water passing off of the acreage
NOTE: The Barron Ranch also diverts from the Old Eagle Lake Canal It must release to downstream user 38 % of second priority water available to it over any 7 day period. If deficiency exists the Watermaster obtains required flow by increasing Barron Reservoir releases accordingly.
Eagle Lake
TO EAGLE LAKE
Creek
ROAD
MERRILLVILLE
Jacob-Neuhaus ditch
TO ADIN
SEE NOTE
Canal
Barron Upper ditch
Eagle Lake
Barron Res
HORSE
TO SUSANVILLE
Old
Willow
LAKE
ROAD
TO SUSANVILLE
SCHEMATIC DIAGRAM OF DIVERSIONS FROM WILLOW CREEK